

HP 3PAR StoreServ 7000 and 7000c Storage Installation Guide

Abstract

This guide is designed to instruct qualified technicians who are authorized to install the HP 3PAR StoreServ 7000 and 7000c series Storage systems (7200, 7200c, 7400, 7400c, 7440c) and associated hardware components.



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Warranty

To obtain a copy of the warranty for this product, see the warranty information website:

<http://www.hp.com/go/storagewarranty>

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1 General Site Planning

Successful installation of the HP 3PAR StoreServ 7000 Storage system requires careful planning and supervision in collaboration with authorized HP representatives. Proper planning will help provide for a more efficient installation and greater reliability, availability, and serviceability. The chapter includes general recommendations for physical planning and site preparation for the storage system installation.

Pre-Installation Planning

When planning and preparing for the installation of a storage system, you assume the following responsibilities:

- Providing suitable space for unpacking, installing, and operating the storage system
- Maintaining the proper environmental conditions for the storage system
- Providing adequate power facilities for the storage system
- Supplying the network connections and external cabling required by the storage system
- Enabling the appropriate HP 3PAR remote support strategy

NOTE: Electronic equipment has special packing for shipping and receives special handling during transportation. HP is responsible for the manufacturing environment and packaging for shipping.

For optimal performance at a specific location, storage systems require controlled environmental conditions that can best be facilitated through raised flooring and under-floor air conditioning. It is the customer's responsibility to monitor this environment to ensure continued conformance with the recommended environmental specifications. Refer to the *HP 3PAR StoreServ 7000 Storage Site Planning Manual* for specific information concerning server room environments.

Adequate power is necessary for the reliable functioning of electronic equipment and for the safety of the customer's installation. The customer is responsible for procuring, installing, and maintaining adequate power to the equipment. Refer to *HP 3PAR StoreServ 7000 Storage Site Planning Manual* for input electrical power and grounding requirements.

All pre-installation activities should be scheduled and completed before the equipment is delivered. The pre-installation process includes the following:

- Hardware configuration planning, such as system component layout and drive allocation
- Networking and cabling topics, such as storage system and SP network topologies, internal system cabling configurations, and cabling of connected host computers

The following are suggested site planning tasks to be completed prior to the delivery and installation of the selected storage system.

- Prepare a preliminary layout of the subsystem installation.
- Review the power and the heating, ventilation, and air-conditioning (HVAC) requirements.
- Order any additional support equipment indicated by the power and HVAC review.
- Work with the appropriate HP representative to ensure that all system units in the specified configuration and all cables of the required length have been ordered.
- Make a final layout of the installation and review the layout with your HP representative.
- Select key personnel and arrange for training with your HP representative.

- Verify the electrical service wiring has been installed at the predetermined location before installing the storage system. Refer to the respective product specifications for detailed requirements.
- Verify any additional support equipment is properly installed and operational.

Prior to installation, review the packaging to make sure the goods have not been tampered with. When unpacking the equipment, verify the delivered shipment of all the equipment is correct. Refer to the packing slip and the SKUs with the shipment. Complete the installation checklist. See [“Storage System Hardware Installation Checklist” \(page 11\)](#). Also, prepare the following checkpoints with your local Sales Representative or Systems Engineer:

- Contact information for customer personnel and for HP technical sales, support, and service personnel
- Implementation project plan
- Configuration information for the storage system to be installed, including system configuration diagrams
- Shipping and delivery details and requirements
- Management workstation, SP, and network information
- Description of the environment
- Volume and RAID level planning information
- Additional notes and comments about installation
- Current support matrix
- System technical specifications
- Systems Acceptance Certificate

Storage System Rack Shipping Containers

A separate shipping container holds each storage system cabinet while drive magazines may be shipped in various types of containers which are listed below. Customers should examine the delivered package for obvious damage or signs of tampering and notify both HP and the carrier of any issues. Once the system has been installed and configured by HP 3PAR personnel, refer to the HP 3PAR OS Common Criteria Administrator's Reference for instructions on confirming that the system hardware and software is what was ordered and the system is configured as expected.

A separate shipping container holds each storage system rack. The drive and node enclosure shipping containers hold a maximum of 24 drives. Examine the delivered package for obvious damage or signs of tampering and notify both HP and the carrier of any issues.

Shipping container measurements are as follows:

- Rack crate container: 85.35 x 50.87 x 35.43 inch (216.80 x 129.20 x 90 cm)
Approximate shipping weight: 1606 lb (728 kg)
- Drive enclosure container: Height 13 inch (33.1 cm) x Width 11 inch (28 cm) x Depth 27 inch (68.6 cm)
Approximate shipping weight: 33.8 lb (15.4 kg)
- Disk drive magazine container: Height 38 inch (96.5 cm) x Width 29 inch (73.6 cm) x Depth 34 inch (86.4 cm)
Approximate shipping weight: 392 lb (177.8 kg)
- Node enclosure container: Height 30 inch (76.2 cm) x Width 35 inch (88.9 cm) x Depth 45 inch (114.3 cm)
Approximate shipping weight: 618 lb (280.3 kg)

When the equipment arrives, you must make sure that there is enough room to unload and unpack the storage system.

The specific amount of space you will need to unpack the storage system is based on the dimensions of the container, the ramp, and the room required to access the storage system so that it can be moved to its placement destination.

NOTE: See *HP 3PAR StoreServ 7000 Storage Site Planning Manual* for more information on placing the storage systems and reserving room for service access.

Acclimatization

Storage systems are shipped or stored at extreme temperatures and may require time to adjust to operating temperatures before startup. The maximum acceptable rate of temperature change for a non-operating system is 36° F/hour (20° C/hour). The storage system requires time to acclimatize to new environmental conditions before being powered on. During that time, it is possible to proceed with the physical installation of the storage system. However, the storage system may need at least 24 hours to acclimatize to a new environment prior to completing the full system installation. If condensation is present even after the 24-hour acclimatization period, it is necessary to wait until all condensation has evaporated before completing the power-on sequence.

2 Getting Started

Before you begin, read the following guidelines to help you complete the installation successfully. If you need assistance with the installation, contact HP Support or visit <http://www.hp.com/support>.

Tools

The following tools are not required but can be useful, especially when unpacking or installing the storage system.

⚠ CAUTION: Always wear an electrostatic discharge (ESD) wrist-grounding strap when installing a storage system hardware part.

- ESD wrist-grounding strap
- ESD mat
- #1 and #2 Phillips screwdrivers
- T-25 Torx toolbit
- 1/8 inch (3 mm) slotted screwdriver
- 3/16 inch (5 mm) slotted screwdriver
- Adjustable wrench
- Diagonal cutting pliers

Precautions

To avoid injury, data loss, and damage, observe these general precautions when installing or servicing the storage system:

- Using improper tools can result in damage to the storage system.
- Prepare an ESD work surface by placing an antistatic mat on the floor or on a table near the storage system. Attach the ground lead of the mat to an unpainted surface of the rack.
- Always use the wrist-grounding strap provided with the storage system. Attach the grounding strap clip directly to an unpainted surface of the rack.
- Avoid contact between electronic components and clothing, which can carry an electrostatic charge.
- If applicable, ensure all cables are properly labeled and easily identifiable before you remove a component.
- Observe local occupational safety requirements and guidelines for heavy equipment handling.
- Do not attempt to move a fully loaded equipment rack. Remove equipment from the rack before moving it.
- Use at least two people to safely unload the rack from the pallet.

Preventing Electrostatic Discharge

ESD can damage electrostatic-sensitive devices and microcircuitry. Proper packaging and grounding techniques are important precautions to prevent damage. To prevent electrostatic damage, observe the following precautions:

- Transport products in electrostatic-safe containers, such as conductive tubes, bags, or boxes.
- Keep static-sensitive parts in their containers until they arrive at static-free workstations.

- Cover workstations with approved static-dissipating material. Use a wrist strap connected to the work surface, and properly grounded (earthed) tools and equipment.
- Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and foam packing.
- Ensure that you are always properly grounded (earthed) when touching a static-sensitive component or assembly.
- Avoid touching pins, leads, and circuitry.
- Always place drives with the printed circuit board assembly-side down.
- Use conductive field service tools.

Racks

Ensure that precautions have been taken to ensure rack stability and safety. Observe all cautions and warnings included in the installation instructions.



WARNING! To reduce the risk of personal injury or damage to the equipment:

- Observe local occupational safety requirements and guidelines for heavy equipment handling.
- Obtain assistance to lift and stabilize the product during installation or removal. Use at least two people to safely unload the rack from the pallet.
- Extend the leveling jacks to the floor.
- Rest the full weight of the rack on the leveling jacks.
- Attach stabilizing feet to the rack if it is a single-rack installation.
- Ensure the racks are coupled in a multiple-rack installation.
- Fully extend the bottom stabilizers on the equipment. Ensure that the equipment is properly supported and braced when installing options and boards.
- Be careful when sliding rack components with slide rails into the rack. The slide rails can pinch your fingertips.
- Ensure the rack is adequately stabilized before extending a rack component with slide rails outside the rack. Extend only one rack component at a time. A rack can become unstable if more than one component is extended.
- Verify the AC power supply branch circuit that provides power to the rack is not overloaded. Overloading AC power to the rack power supply branch circuit increases the risk of personal injury, fire, and damage to the equipment. The total rack load should not exceed 80% of the branch circuit rating. Consult the electrical authority with jurisdiction over your facility wiring and safety electrical requirements before performing the installation.
- Remove all pluggable power supplies and modules to reduce the weight of the product.
- Always load the heaviest item first, from the bottom of the rack and up. This makes the rack bottom-heavy and more stable.
- Do not attempt to move a fully loaded equipment rack. Remove equipment from the rack before moving the rack.

Inspecting the Packaging

Before unpacking any boxes, inspect the packaging for crushes, cuts, water damage, or any other evidence of mishandling during transit. If there is any damage, photograph the packaging for future reference.

Redeeming and Registering HP 3PAR Licenses

HP 3PAR StoreServ 7000 products include 3PAR licensing, which enables all system functionality. Failure to register the license key may limit access and restrict system upgrades.

The Summary Entitlement Certificate is enclosed in a blue envelope in the accessories kit shipped with the system. The certificate must be redeemed through the HP Licensing for Software portal before you begin installing the hardware and software components.

To redeem the Summary Entitlement Certificate, visit www.hp.com/software/licensing and register all applicable HP software licenses. Use your HP Passport credentials or create a new HP Passport profile.

For assistance with registering the HP software licenses, visit the HP Support website: <http://www.hp.com/support>.

Storage System Installation

You can install the storage system in one of two ways, depending on your configuration. Both methods connect to the network in the same way.

- Setting up an HP integrated rack installed with system components and delivered to the customer. See “[Setting Up a Factory-Integrated Storage System](#)” (page 31).
- Installing system components in an existing rack. System components are shipped to the customer in separate packaging, and are installed by the customer in a third-party rack or HP rack. See “[Installing Storage System Components into a Rack](#)” (page 35).

See the *HP 3PAR StoreServ 7000 Storage Site Planning Manual* for configuration specifications and installation requirements.

For information about supported hardware and software platforms, visit the Single Point of Connectivity Knowledge for HP Storage Products (SPOCK) website at <http://www.hp.com/storage/spock>.

Storage System Hardware Installation Checklist

Before you begin installing the storage system hardware components, verify the environmental, rack access, and electrical requirements (as documented in the *HP 3PAR StoreServ 7000 Storage Site Planning Manual*) have been met and that you have the following:

- Standard AC power
- Host computer with access to software, BIOS, drives, and HP 3PAR OS
- Fibre Channel (FC) HBA, FC host cable, and power cord
- Network access
- Service Processor (SP) connectivity
- Tools
- Rail kits
- Storage system and its components

3 Identifying Storage System Components

NOTE: The illustrations in this chapter are examples only and may not accurately represent your storage system configuration.

Understanding Component Numbering

Due to the large number of prospective configurations, component placement and internal cabling is standardized to simplify installation and maintenance. System components are placed in the rack according to the principles outlined in this chapter, and are numbered according to their order and location in the cabinet.

The storage system can include the following types of drive and node enclosures:

- The HP M6710 Drive Enclosure (2U24) holds up to 24, 2.5 inch small form factor (SFF) Serial Attached SCSI (SAS) disk drives, arranged vertically in a single row at the front of the enclosure (numbered 0 to 23). The back of the enclosure contains two 580 W power cooling modules (PCMs) and two I/O modules. [Figure 1 \(page 13\)](#) shows the 2U24 drive enclosure, and also applies to the StoreServ 7200 and 7400.
- The HP M6720 Drive Enclosure (4U24) holds up to 24, 3.5 inch large form factor (LFF) SAS disk drives, arranged horizontally with four columns of six disk drives at the front of the enclosure (numbered 0 to 23). The back of the enclosure contains two 580 W PCMs and two I/O modules. [Figure 2 \(page 13\)](#) shows and applies only to the 4U24 drive enclosure.
- The HP 3PAR StoreServ 7000 and 7000c series controller enclosures hold up to 24, 2.5 inch SFF SAS disk drives arranged, vertically in a single row at the front of the enclosure (numbered 0 to 23). The back of the enclosure contains two 764 W PCMs and two controller nodes.

① **IMPORTANT:** [Figure 2 \(page 13\)](#) applies only to the 4U24 drive enclosure. [Figure 1 \(page 13\)](#) is applicable to the 2U24 drive enclosure as well as the 3PAR StoreServ 7200 and 7400 2-node.

Disk Drive Numbering

There are two types of drive enclosures. The maximum number of supported drive enclosures varies based on the model and the number of nodes.

Disk drives are mounted on a drive carrier or magazine and are located the front of the enclosures.

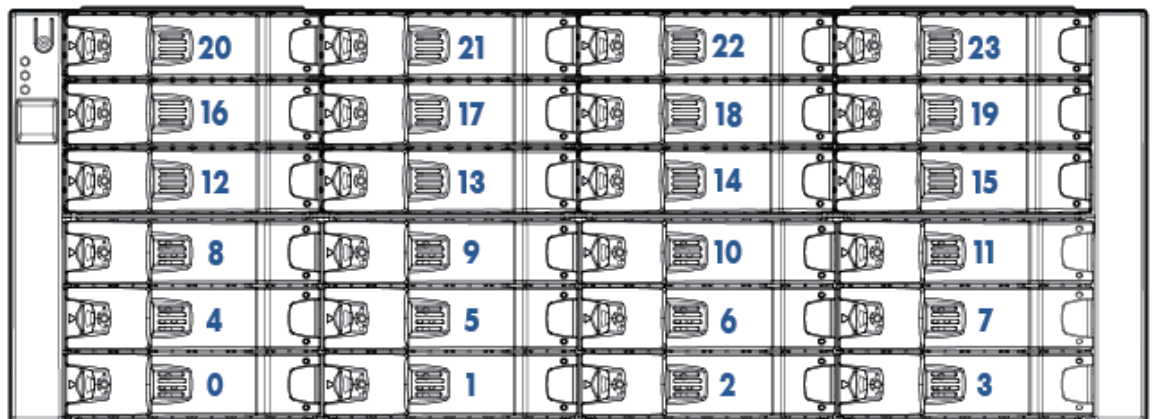
- 2.5-inch SFF disk drive numbering

Figure 1 HP M6710 Drive Enclosure (2U24) 2.5-inch SFF



- 3.5-inch LFF disk drive numbering

Figure 2 HP M6720 Drive Enclosure (4U24) 3.5-inch LFF



In the HP 3PAR Management Console or CLI, the enclosures are displayed as follows: DCS2 for the 2U24 (M6710), DCS1 for the 4U24 enclosure (M6720), and DCN1 for the 7200, 7200c, 7400, 7400c, or 7440c controller node enclosure.

Controller Nodes

The controller node is a storage system component that caches and manages data in a system and provides hosts with a coherent, virtualized view of the system. Controller nodes are located in the rear of the node enclosure.

The HP 3PAR StoreServ 7000 series Storage system contains either two nodes or four nodes. For a 2 node system: node 0 and node 1 and for a 4 node system : node 0 and node 1 in the lower controller enclosure, and node 2 and node 3 in the upper controller enclosure in a system with four nodes.

Figure 3 HP 3PAR StoreServ 7200 Controller Nodes

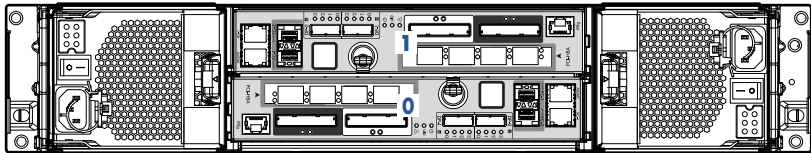
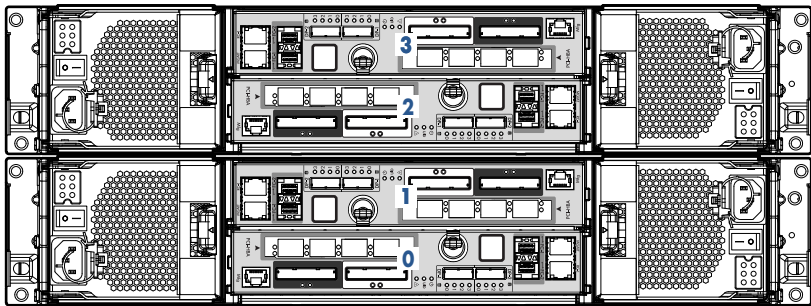


Figure 4 HP 3PAR StoreServ 7400 Controller Nodes



Controller Node PCIe Slots and Ports

Table 1 (page 15) describes default configurations for the HP 3PAR StoreServ 7000 Storage system:

Table 1 Storage System Expansion Cards

Expansion cards	Nodes 0 and 1	Nodes 2 and 3
2 FC HBAs only	1 FC HBA each	No expansion card
2 10 Gb/s converged network adapter (CNA) only	1 10 Gb/s CNA each	No expansion card
2 FC HBAs + 2 10 Gb/s CNAs	1 FC HBA each	1 10 Gb/s CNA each

The following expansion cards are supported:

- 4-port 8G FC HBA
- 2-port 16G FC HBA
- 2-port 10G CNA
- 2-port 10G Ethernet NIC
- 4-port 1G NIC

NOTE: If you are upgrading from a two-node to a four-node configuration, you can have CNAs installed in node 0 and node 1, and FC HBAs installed in node 2 and node 3.

Figure 5 (page 15) shows the ports on a controller node.

Figure 5 Location of Controller Node Ports

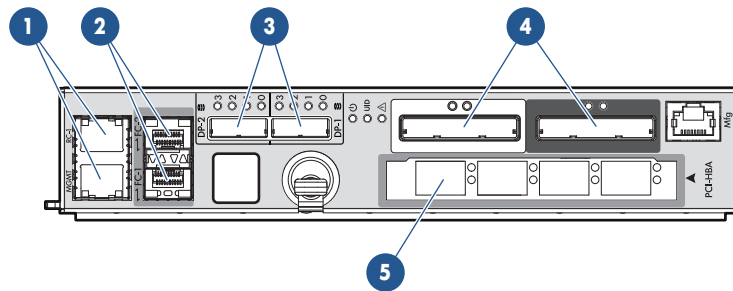


Table 2 Controller Node Ports

Item	Port
1	2 Ethernet MGMT-Used to connect to the storage array management interfaces RC-Used to connect to Remote Copy
2	Fibre Channel (FC-1 and FC-2)-used to connect to host systems
3	SAS (DP-2 and DP-1)-used with SAS cables to connect to the drive enclosures and I/O modules

Table 2 Controller Node Ports *(continued)*

Item	Port
4	Node Interconnect-Used with 4 directional interconnect cables that connect the controller nodes (4-node 7400 and 7400c, 7440c only)
5	PCI-e slot for optional HBA adapters: 4-port 1Gb/s Ethernet, 4-port 8 Gb/s FC HBA, 2-port 10Gb Ethernet, 2-port 16 Gb/s FC, 2-port 10 Gb/s CNA

NOTE: The MFG port is not used.

I/O Modules

The I/O modules connect the controller nodes to the hard drives using a SAS cable, enabling the transfer of data between the nodes, hard drives, PCMs, and enclosures. The I/O modules are located at the rear of the drive enclosure. There are two I/O modules per enclosure, numbered 0 and 1 from bottom to top (see [Figure 6 \(page 17\)](#) and [Figure 7 \(page 17\)](#)).

Figure 6 M6710 I/O Module

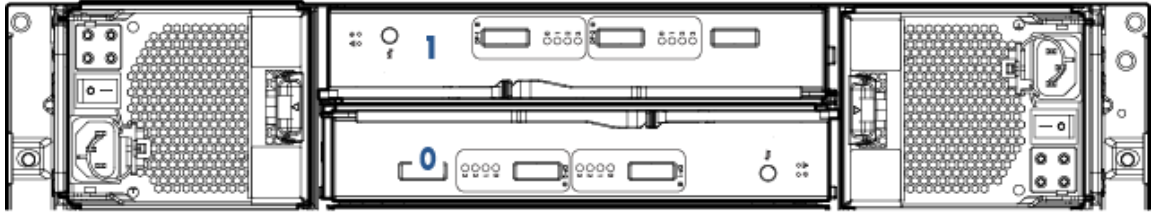
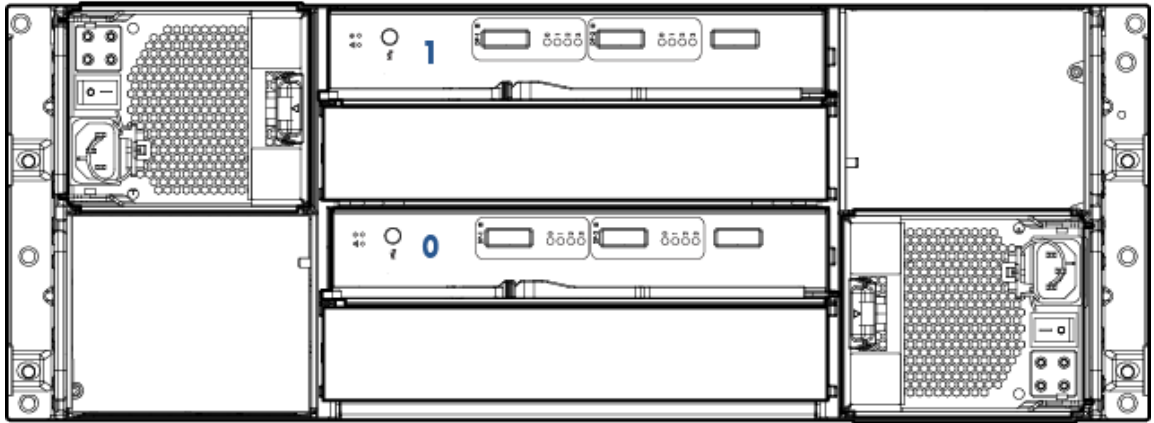


Figure 7 M6720 I/O Module



NOTE: The I/O modules are located in slots 0 and 1 of the HP M6710 and HP M6720 Drive Enclosure.

Power Cooling Modules

The power cooling module (PCM) is an integrated power supply, battery, and cooling fan. There are two types of PCMs:

- The 580 W is used in the drive enclosures and does not include a battery.
- The 764 W is used in the node enclosures and includes a replaceable battery.

The PCMs are located at the rear of the storage system, and on the sides of the enclosure. There are two PCMs per enclosure. The PCMs are numbered 0 and 1 from left to right.

Figure 8 PCM Numbering for HP 3PAR 7200 (2U) Controller Node Enclosure

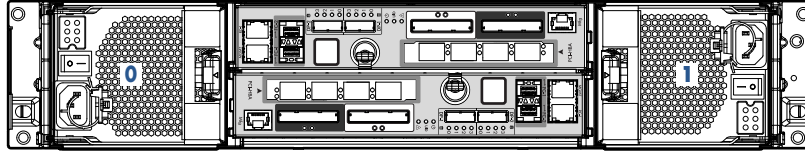
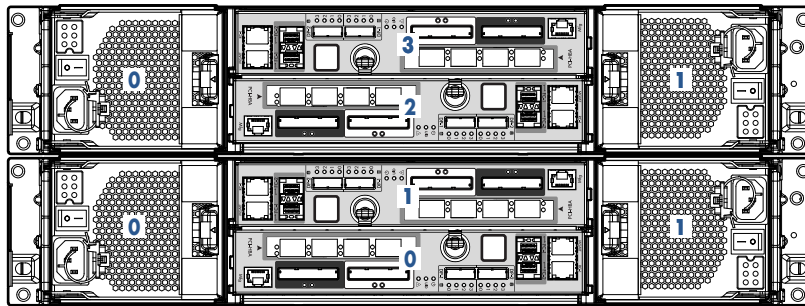


Figure 9 PCM Numbering for HP 3PAR 7400 (4U) Controller Node Enclosure



In the HP 3PAR M6720 Drive Enclosure, the two PCMs are located diagonally from one another. The remaining PCM slots are filled with blank panels (see [Figure 10 \(page 18\)](#) and [Figure 11 \(page 18\)](#)).

Figure 10 PCM Numbering for HP M6710

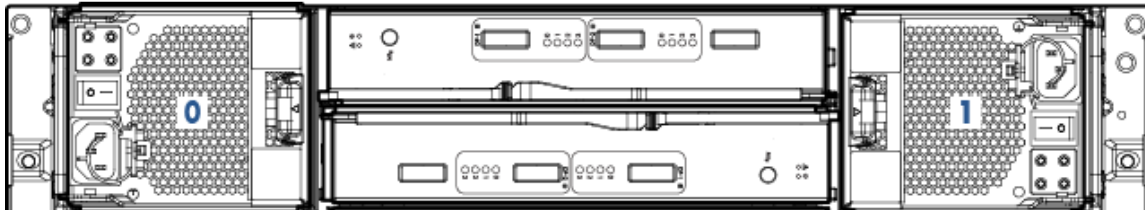
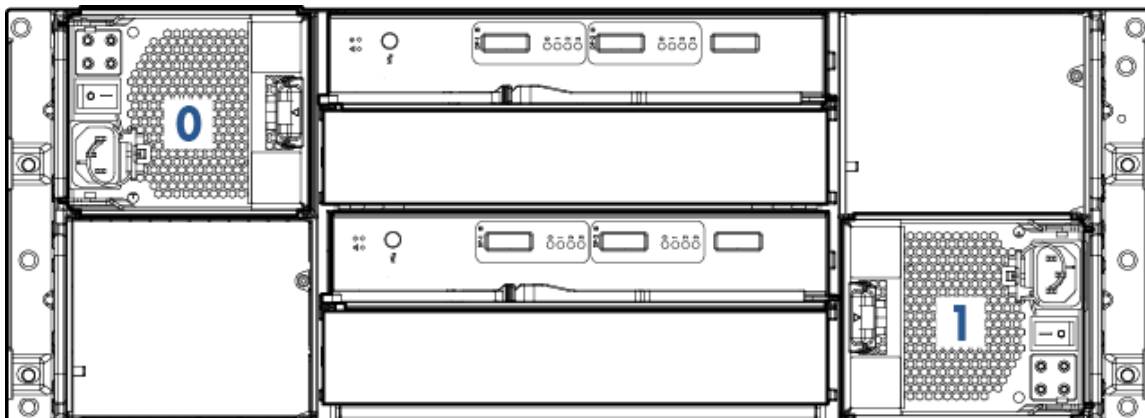


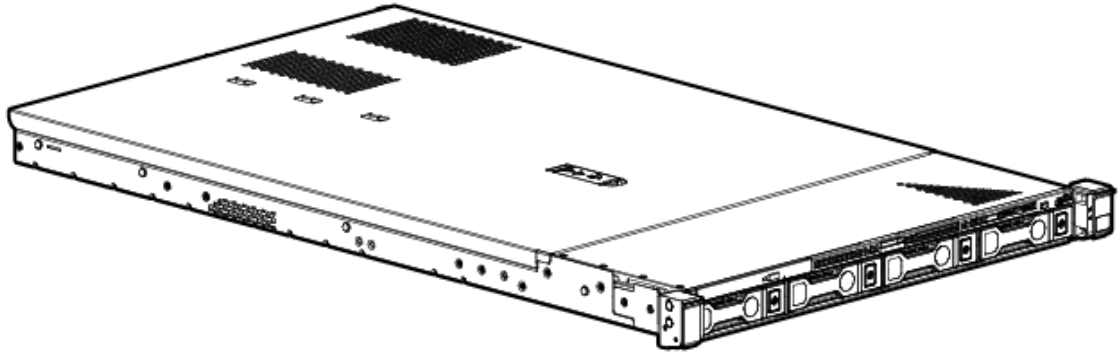
Figure 11 PCM Numbering for HP M6720



Service Processor

The HP 3PAR StoreServ 7000 Storage system can include an HP 3PAR Service Processor (SP) or a Virtual Service Processor (VSP). If your configuration includes an SP, it is located at the bottom of the rack under the enclosures and above the PDUs.

Figure 12 HP 3PAR Service Processor DL 320e



For more information, see [“Connecting to a Physical Service Processor”](#) (page 67).

Power Distribution Units

In each HP G3 rack, two PDUs are mounted horizontally at the bottom of the rack, numbered 0–1 from bottom to top. The default configuration for the HP Intelligent Series Racks is two PDUs mounted vertically at the bottom of the rack so to provide a front-mounting unit space.

Make sure there is enough clearance for service. For example, the PDUs mounted vertically at the back of a rack must have enough clearance to remove node and drive chassis power supplies.

NOTE: Depending on the configuration, PDUs can be mounted vertically.

4 Installing a Power Distribution Unit

This chapter provides installation instructions for qualified personnel for installing an HP Basic PDU.

Safety and Regulatory Compliance

For safety, environmental, and regulatory information, see Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the HP website (<http://www.hp.com/support/Safety-Compliance-EnterpriseProducts>).

Important Safety Information

Before installation, read the *Important Safety Information* that ships with the product you are connecting. This document is also available on the HP website (<http://www.hp.com/support/importantsafetyinformation>).

This PDU is intended only for ITE loads with linear/PFC input current. If non-linear loads are connected, the nameplate current rating of the PDU must be reduced by a factor of 0.8.



WARNING! A risk of personal injury from electric shock and hazardous energy levels exist. The installation of options and routine maintenance and service of this product must be performed by individuals who are knowledgeable about the procedures, precautions, and hazards associated with AC power products.

Follow these safety precautions when connecting multiple hardware components to power sources.



WARNING! To reduce the risk of fire, electric shock and damage to power sources.

- Connect only to a circuit providing branch circuit overcurrent protection of appropriate current rating.
- Connect the input power cord into a grounded (earthed) electrical outlet that is located near the equipment and is easily accessible.
- Be sure all circuit breakers are in the off position before connecting input power.
- Be sure that the load products connected to the HP PDU are adjusted for, or otherwise capable of operation from the same line voltage supplying the PDU. Failure to verify the voltage can lead to severe equipment damage.
- Do not overload the PDU. The total input current rating of all equipment connected to each output cannot exceed the total output rating marked on the PDU.
- Use only the hardware provided to install the PDU.

WARNING! To reduce the risk of personal injury from high-leakage current, verify earth connection before connecting the power supply.

The summation of input power for multiple pieces of information technology equipment through the use of power products can result in high-leakage currents.

If the total system leakage current for a system of components exceeds 3.5 mA:

- The use of a detachable input power cord is prohibited.
 - The input power cord must be securely attached, and it should be connected to the AC mains by hardwiring or through the use of a non-residential, industrial-styled plug that maintains positive earth connection.
 - If the total system leakage current through the ground conductor exceeds 5% of the input current per line under normal operating conditions, the system loads should be divided among multiple power connections.
-

Required Tools

The following tools are required for installation:

- Phillips screwdriver
- Torx screwdriver

Additional requirements

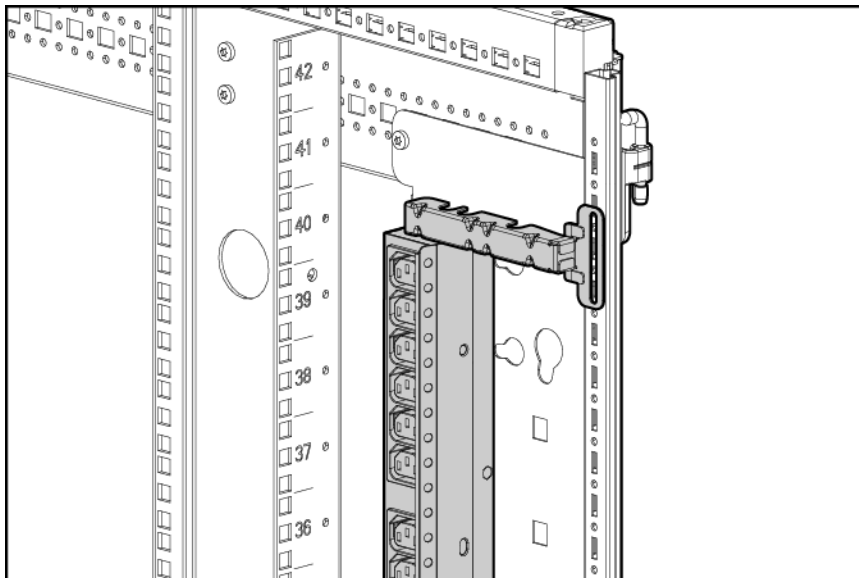
If your facility or configuration requires an L5–20R plug, you must obtain a third-party L5–20R to NEMA 5–20P adapter before installing or connecting the H5M54A 1.9kVA 120V Basic PDU.

Recommended Hardware Configurations

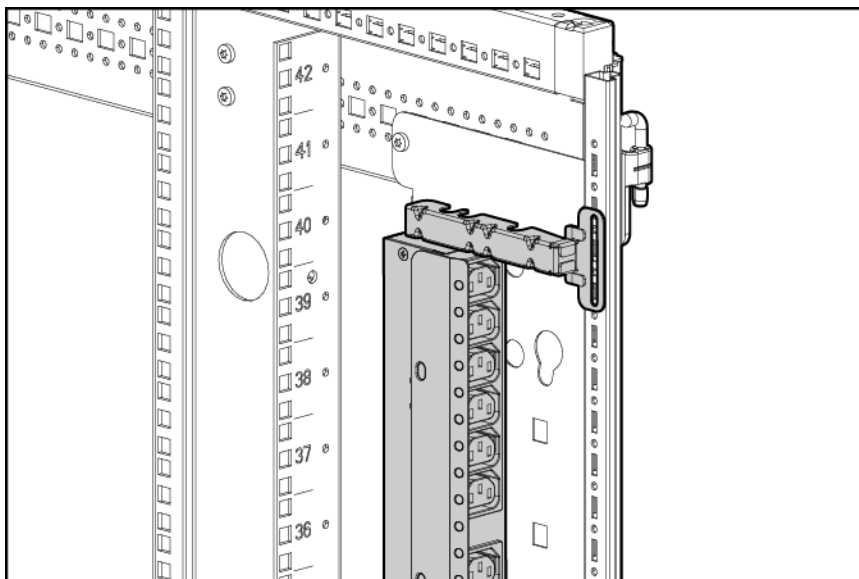
Configurations

The PDU is installed in a rack in the following configurations:

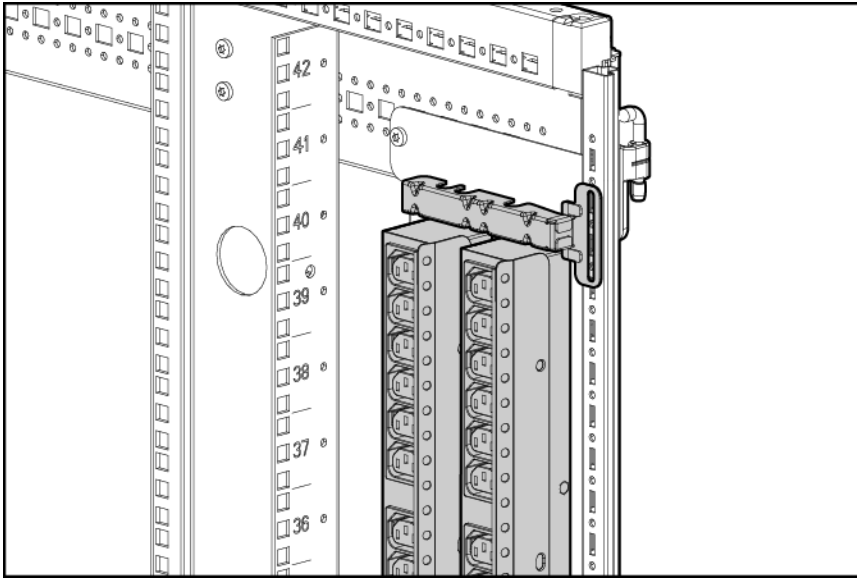
- A single PDU configuration, with the outlets facing the center of the rack



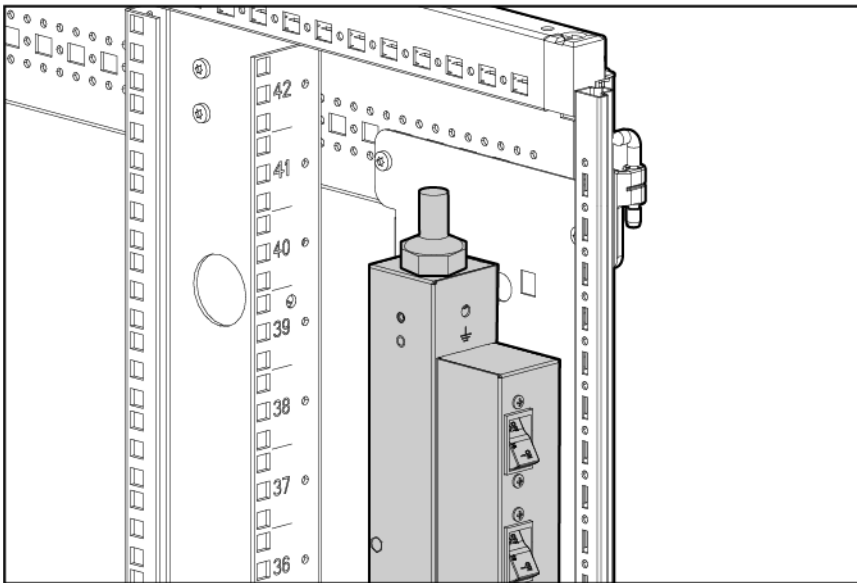
- A single PDU configuration, with the outlets facing the rear of the rack



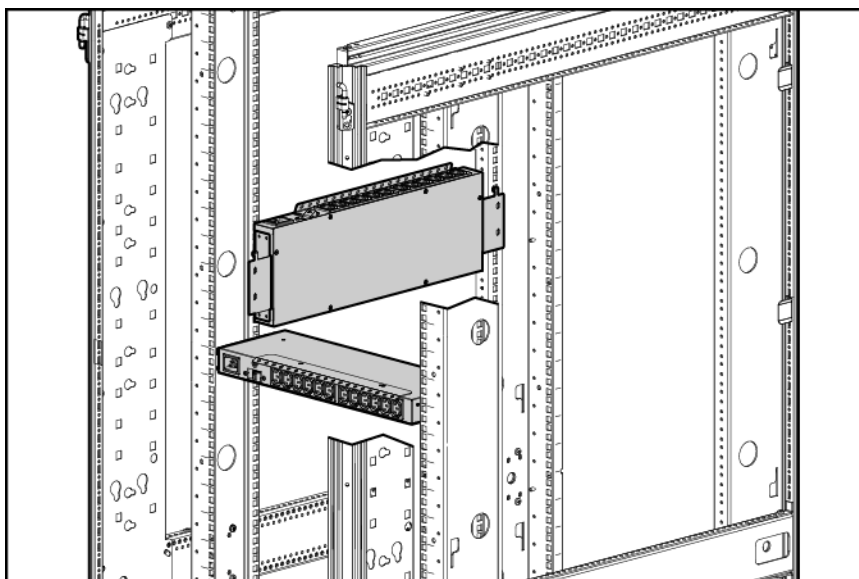
- A double PDU, configuration, with the outlets facing the center of the rack



- An inverted PDU, with the input power cable exiting the top of the rack



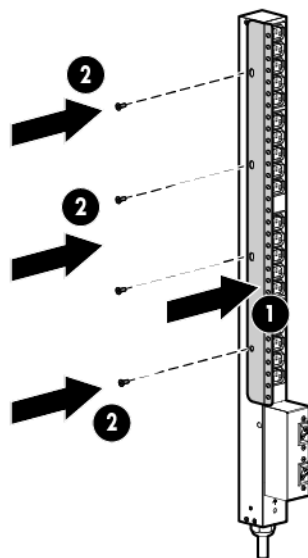
- 1U and 0U configurations



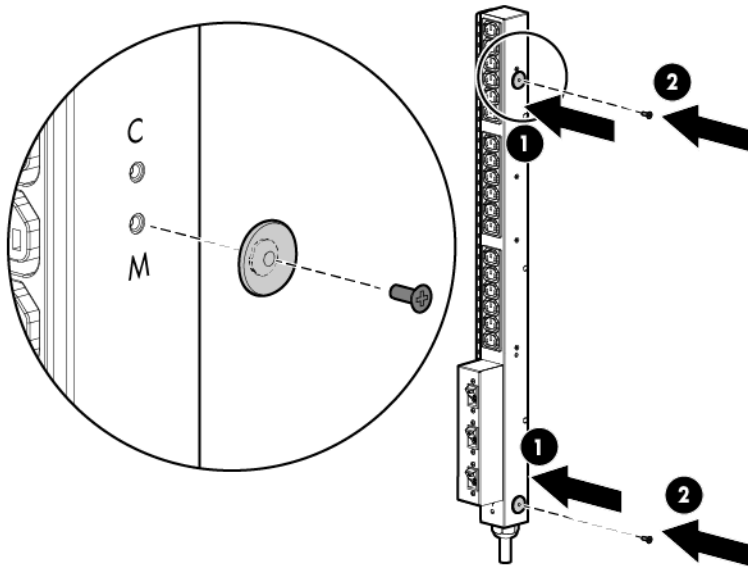
Hardware Installation

Installing the PDU

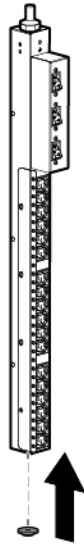
1. Align and install the power cord retention bracket with the screw holes marked "C".



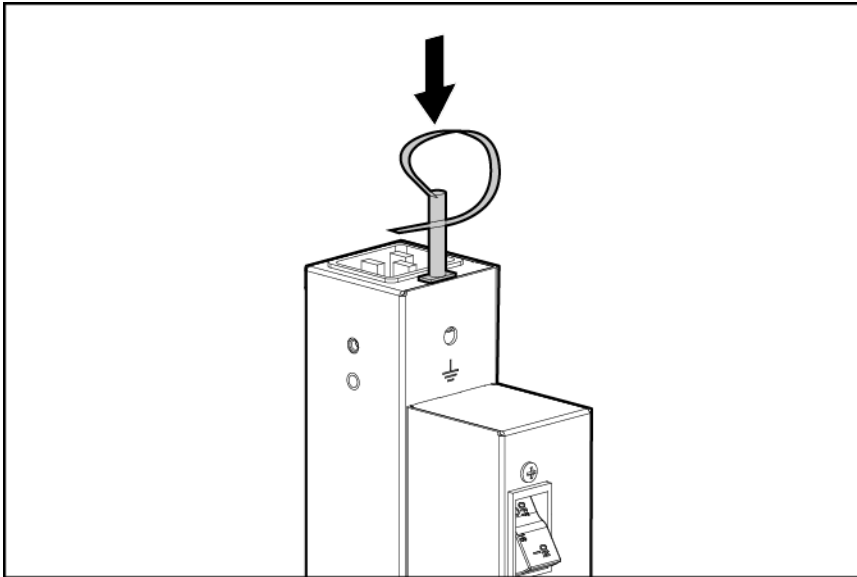
2. Align and install the mounting pins with the screw holes marked "R".



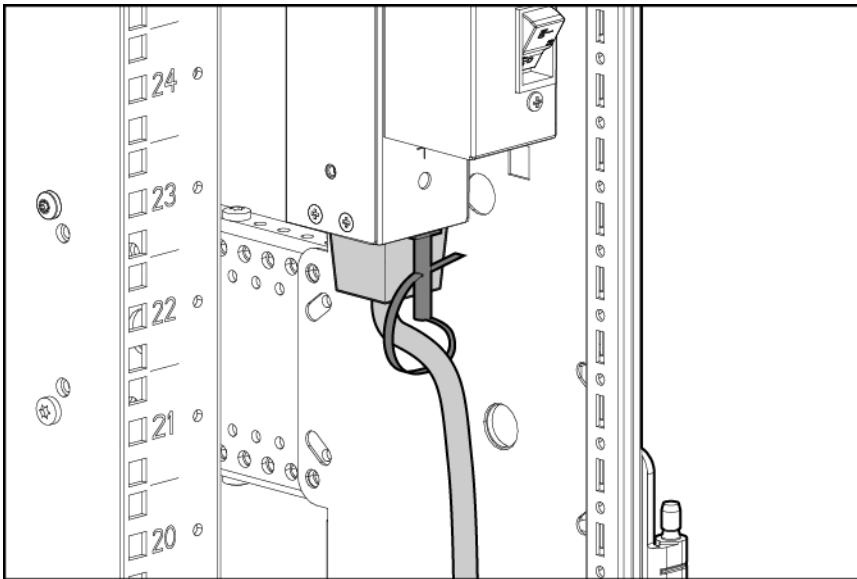
3. If installing the PDU inverted, install a mounting pin on the bottom of the PDU.



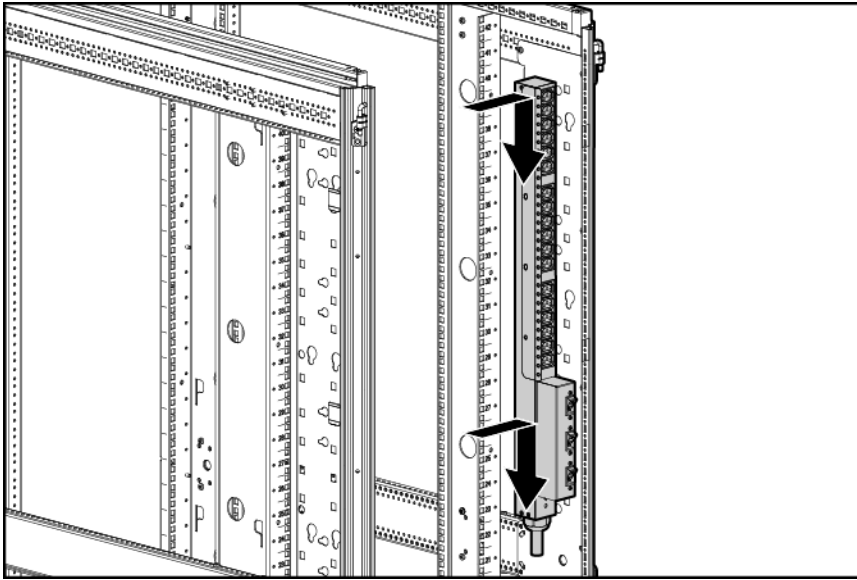
4. If needed, install the input power cable retention band.



5. If needed, insert and secure the power cable.

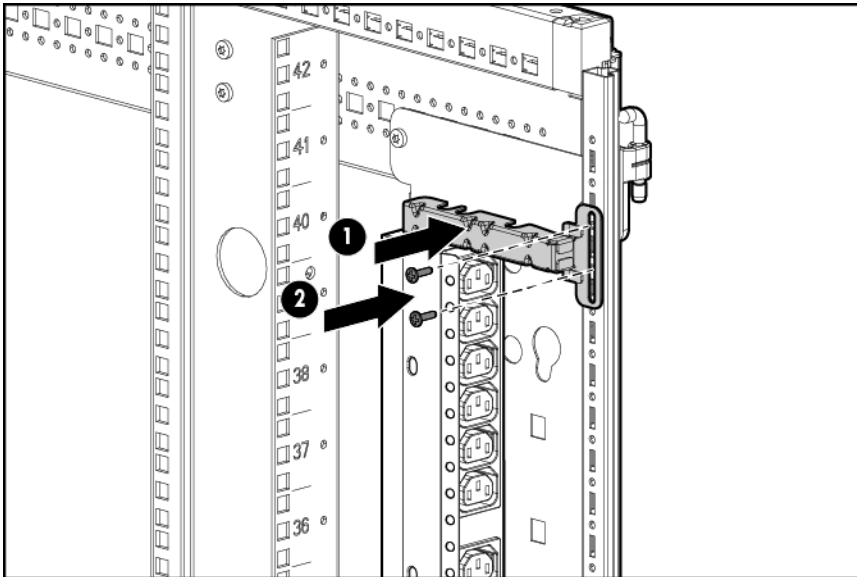


6. Install the PDU and ensure the mounting pins are engaged with the rack.

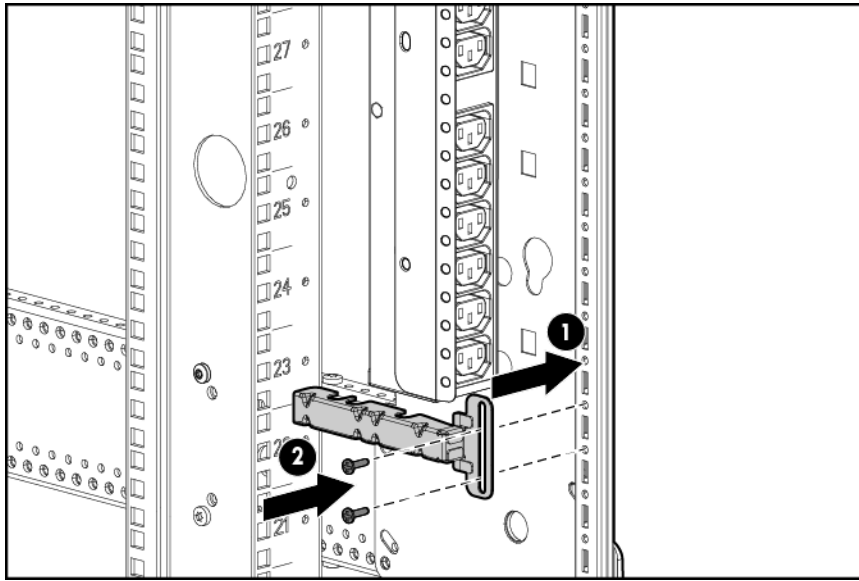


⚠ **CAUTION:** When moving a rack with installed components, always use the shipping bracket to secure the PDU.

7. If the PDU is not inverted, install the shipping bracket above the PDU.

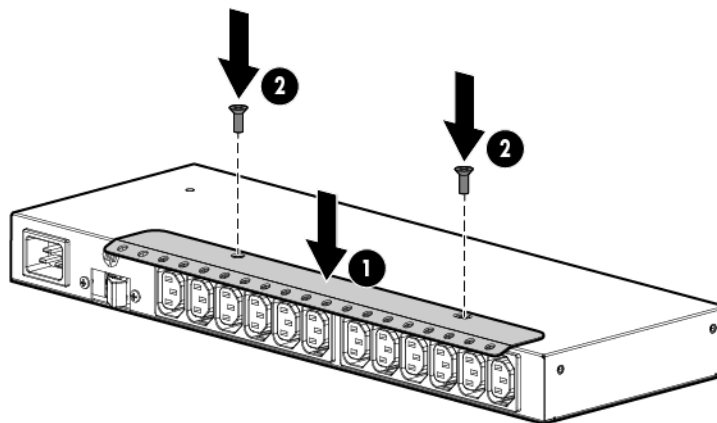


8. If the PDU is inverted, install the shipping bracket over the mounting pin below the PDU.

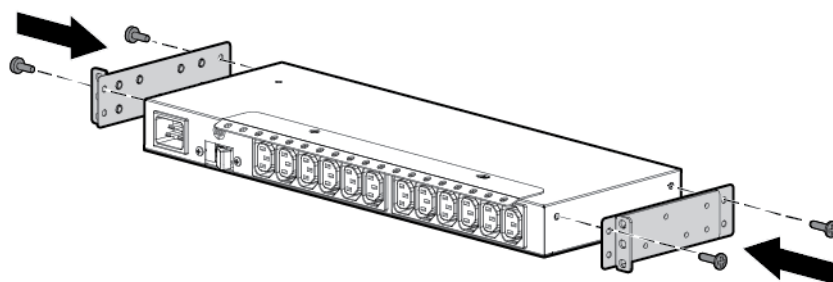


Installing the 1U and 0U PDUs

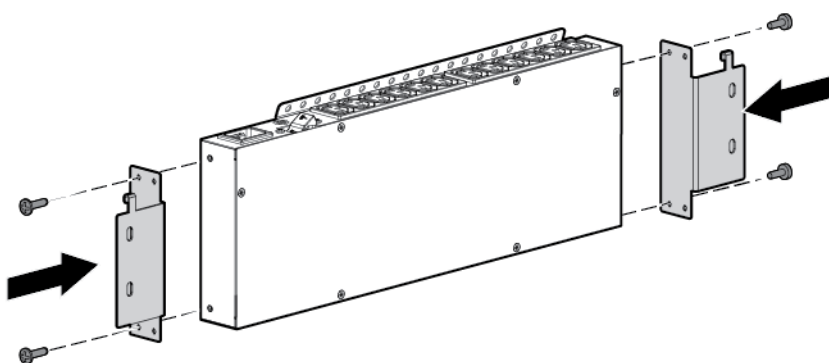
1. Attach the power cord retention bracket.



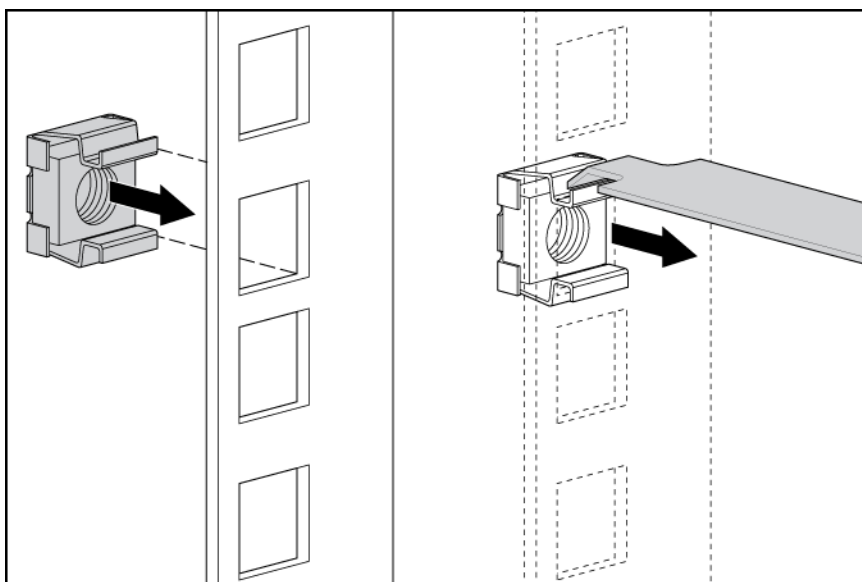
2. Attach the appropriate mounting brackets:
 - 1U bracket installation



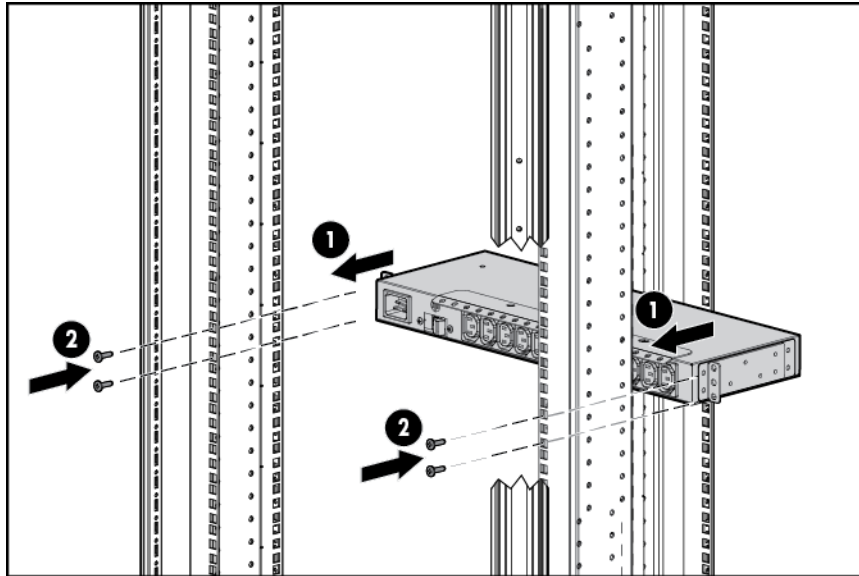
- 0U bracket installation



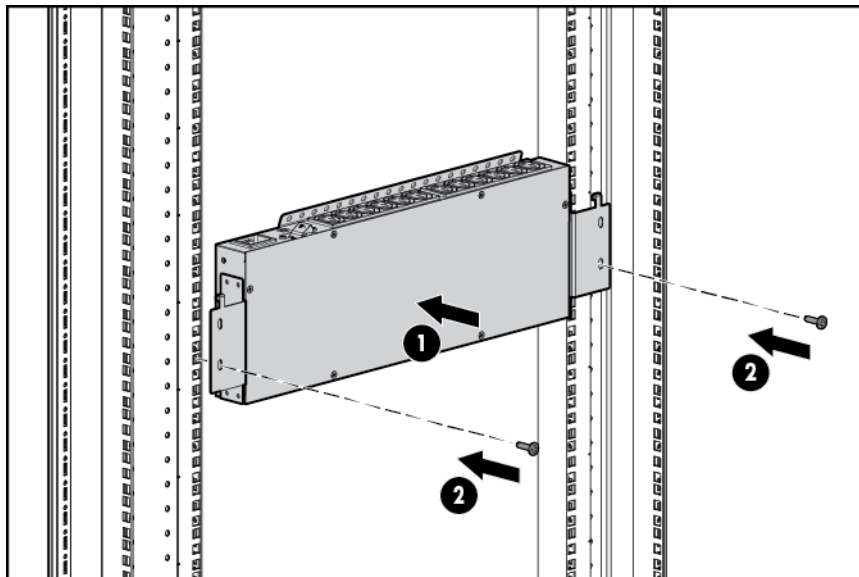
3. Install cage nuts.



4. Install the PDU:
- 1U installation

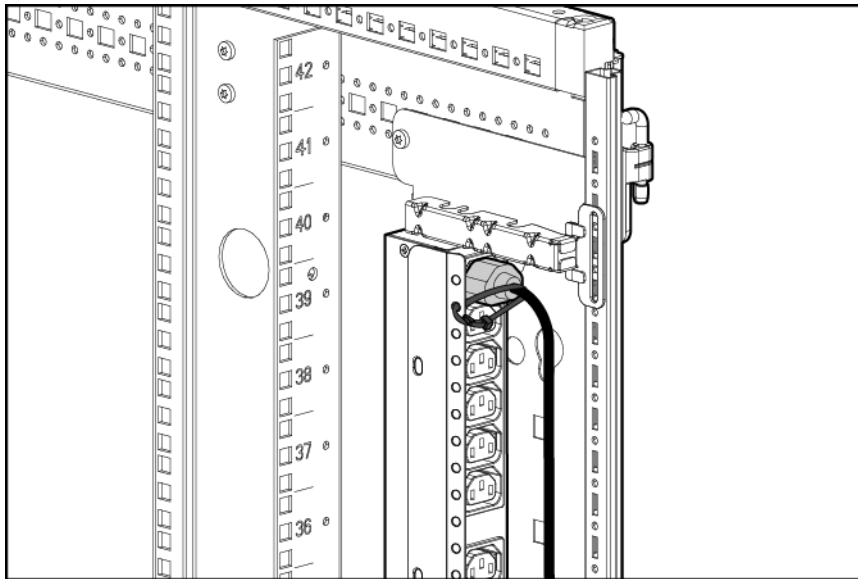


- 0U installation



Securing the Cables

Secure the cable weight to the retention bracket.



Installation is complete.

5 Setting Up a Factory-Integrated Storage System

This chapter describes the procedures for setting up a storage system that is delivered in a factory-integrated HP cabinet with all of the components installed. Before you set up a storage system, ensure all requirements documented in the *HP 3PAR StoreServ 7000 Storage Site Planning Manual* have been met.

⚠ WARNING! Do not use this procedure if you are installing storage system components into an existing or partially populated rack. To install storage system components into an existing rack, see [“Installing Storage System Components into a Rack” \(page 35\)](#).

NOTE: Some factory-integrated storage systems may have controller nodes mounted in the center of the rack.

Unpacking the Cabinet

When unpacking the rack, refer to the unpacking diagrams on the outside of the cardboard shipping container.

⚠ CAUTION: To avoid tipping the cabinet, one person must guide the cabinet down the ramp, with the other person pushing from behind.

To unpack the rack:

1. Locate the front of the shipping container and unlatch the four rotary latches securing the front panel. To unlatch the rotary latches, raise the levers and turn them counterclockwise one half-turn.
2. Lower the front panel of the shipping container to form a ramp.
3. Remove the packing foam from the front of the storage system.
4. Remove the rack from the container.
5. Carefully guide the rack down the ramp.
6. Remove the plastic packing materials and place them into the shipping container for reuse.

Positioning the Cabinet

⚠ CAUTION: To prevent potential damage to system equipment, do not adjust the position of the cabinet when the power is on.

Position the cabinet in the operating location. If the operating location has raised floor tiles with cutouts to facilitate cable routing, position the cabinet over the cutouts in the tiles. See the *HP 3PAR StoreServ 7000 Storage Site Planning Manual* for more information on the structural considerations for using raised flooring.

After positioning the storage system, use the four leveling feet to stabilize the cabinet and prevent movement during operation:

1. Using an adjustable wrench, turn each leveling foot clockwise until the weight of the rack rests on the leveling feet instead of the casters.
2. Using the wrench, lock the leveling feet in place by turning the locking nut on each foot counterclockwise until tight.
3. Verify the rack is stationary.

For more information on final positioning, see [“Repositioning the Storage System” \(page 54\)](#).

Verify the Cabling

The cabling for a factory-integrated storage system is complete. You must plug in the power cords and install the host and Ethernet cables.

NOTE: In a four-node 7400 system, two cable management brackets have Velcro straps to hold the cables. You can remove and discard these brackets, but HP recommends saving them for future use. To remove the cable management brackets, loosen the Torx screws and unlatch the Velcro straps to free the cabling.

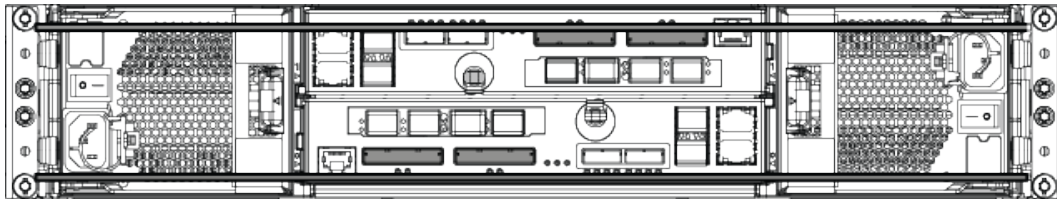
Installing and Removing the Cable Restraint Shipping Brackets

The cable restraint shipping brackets support the connected data cables and connectors during transport. HP recommends installing the brackets before transporting the system to another location to prevent damage to the connectors. The brackets are not required if the system is in a stationary position. Retain and store the brackets if they are not being used.

Installing the Brackets

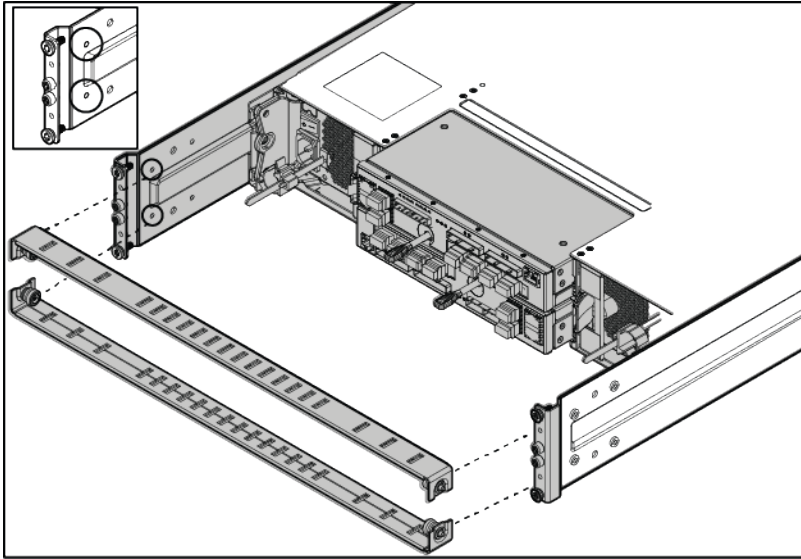
1. Connect the data cables to the enclosure.
2. Attach the hook and loop straps to the brackets.
3. Align the brackets so they parallel to the edges of the enclosure link connectors (see [Figure 13 \(page 32\)](#)). Adjust the brackets to the height of the screw holes located on the side rails.

Figure 13 Aligning the Brackets



4. Attach the brackets to the side rails.

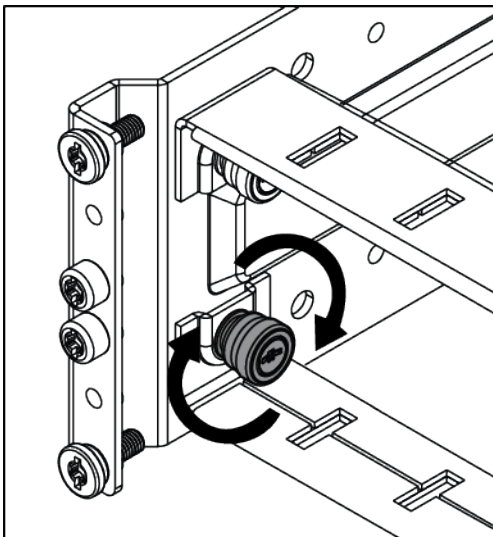
Figure 14 Attaching the Brackets to the Side Rails



5. Tighten the captive screws (see [Figure 15 \(page 33\)](#)).

NOTE: Make sure the brackets are aligned and leveled with the link connectors before tightening the captive screws. HP recommends tightening the screws to 19 in-lbs.

Figure 15 Tightening the Captive Screws

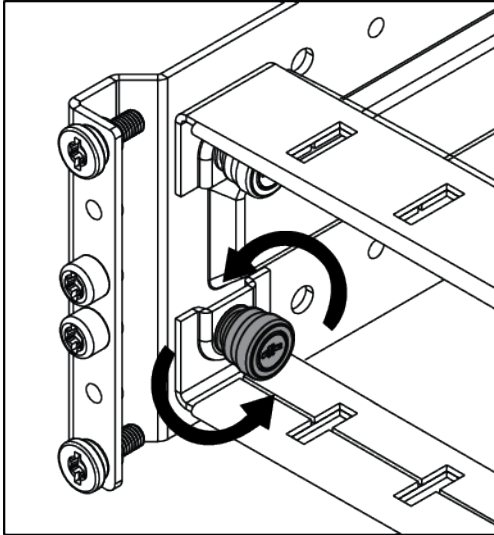


Removing the Brackets

Remove the cable restraint shipping brackets only when the cabinet is in its final location.

1. Remove the data cables from the hook and loop straps.
2. Loosen the captive screws (see [Figure 16 \(page 34\)](#)).

Figure 16 Loosening the Captive Screws



3. Remove the brackets. Be careful not to damage the attached data cables.

Now continue on to [“Verifying Setup and Powering On the Storage System” \(page 54\)](#) and verify setup before powering on the storage system and initializing the SP and storage system software.

6 Installing Storage System Components into a Rack

This chapter describes the procedures for installing storage system components in an existing rack. Before you set up a storage system, ensure that all requirements documented in the *HP 3PAR StoreServ 7000 Storage Site Planning Manual* have been met.

Follow these procedures if you are installing any of the following storage system components in an existing or partially populated rack:

- PCIe adapters
- Disk Drive enclosures
- Controller node enclosures
- Cables
- Disk drives

To set up a storage system delivered in a fully loaded HP cabinet, see [“Setting Up a Factory-Integrated Storage System” \(page 31\)](#).

Unpacking Disk Drive and Controller Node Enclosures

The enclosure includes nodes, I/O modules, and PCMs.

CAUTION: The enclosure is heavy. Lifting, moving, or installing it requires two people.

To unpack the enclosure:

1. Cut open the cardboard box and remove the top.
2. Remove the rail kit.
3. Remove the packing foam around the enclosure.
4. Remove the enclosure from the box.

Installing the Rail Kit

Before you install the enclosure in the rack, you must mount the two rail shelves to the rack.

To mount a one unit (1U) rail shelf (used for installing a SP) to the rack, follow the installation instructions included with the rail kit.

[Table 3 \(page 35\)](#) lists the rail kit part numbers for each type of installation.

Table 3 Part Numbers

2U Enclosure	4U Enclosure
Rail Kit Assembly 692981-001	Rail Kit Assembly 692982-001

NOTE: For more information about the rail kit assembly, see [“Rail Kits” \(page 104\)](#).

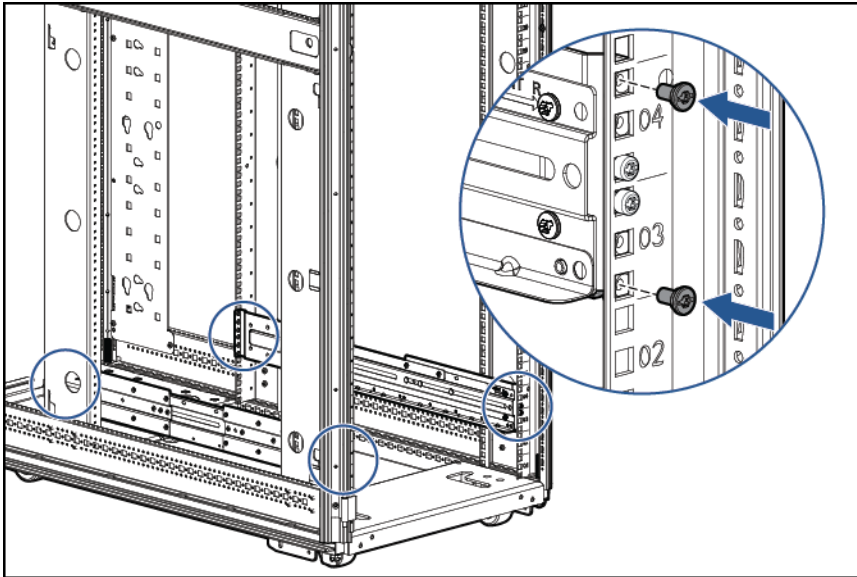
The rail kit contains two rails, two middle support brackets, and T-25 Torx screws. The rail channels are mounted to the inside of the rack using two shoulder screws at each end of the rack (four screws per rail), and a middle support bracket for mounting between the adjustable rails. Installing the middle support bracket applies only to the 2U and 4U enclosures. The following text is imprinted on both ends of the rails: **FRONT-R** and **FRONT-L**.

NOTE: The middle support bracket is only used in an HP rack with posts that extend to a depth of 29-inches. Install the middle support bracket when transporting the system to another location. Retain and store the middle support brackets if they are not being used.

Mounting a 2U rail shelf onto the rack

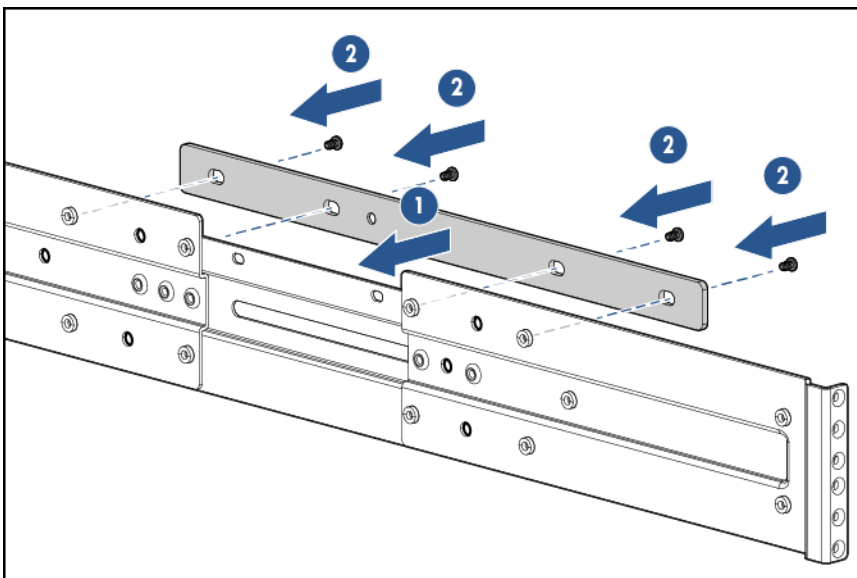
1. Determine the location of the directional-specific rail matches with the side of a rack post. The following text is imprinted on both ends of the rails: **FRONT-R** and **FRONT-L**.
2. Align one end of the rail channel with the holes of the rack post, and then push to seat the locating pins in the rack.
3. Expand the rail to connect to the other end of rack post.
4. Secure the front and rear of the rail assembly to the rack post using four T25 Torx shoulder screws (two in front, two in back) in the top and bottom holes. Tighten the shoulder screws with a torque of 19 in-lbs.

Figure 17 Mounting the 2U Rail Shelf



5. Install the middle support bracket before transporting:
 - a. Align the middle support bracket holes with the top holes of the rails. The orientation of the middle support bracket is neutral.
 - b. Insert and tighten screws.

Figure 18 Installing the Middle Support Bracket

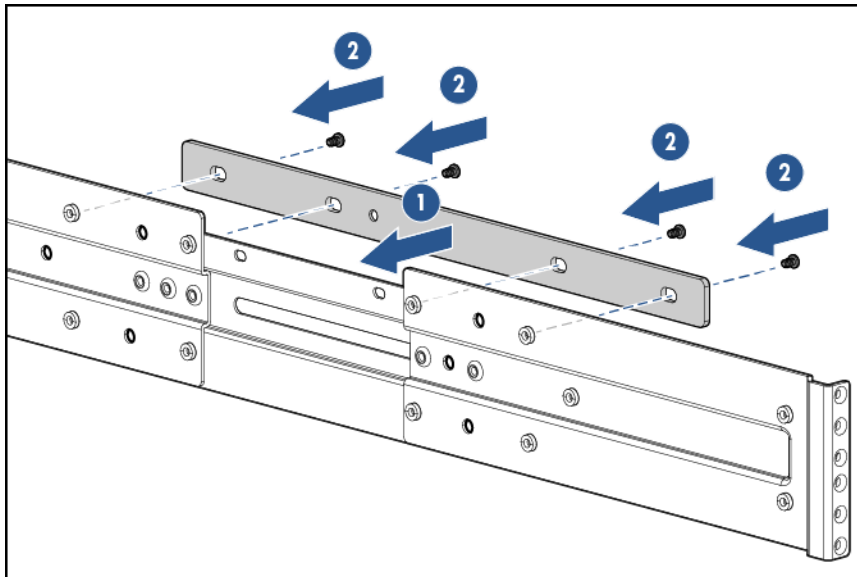


6. Repeat steps 1 through 5 for the other rail.
7. Check both sides at the front and back of the rack to ensure all screws are installed properly.

Mounting a 4U rail shelf onto the rack

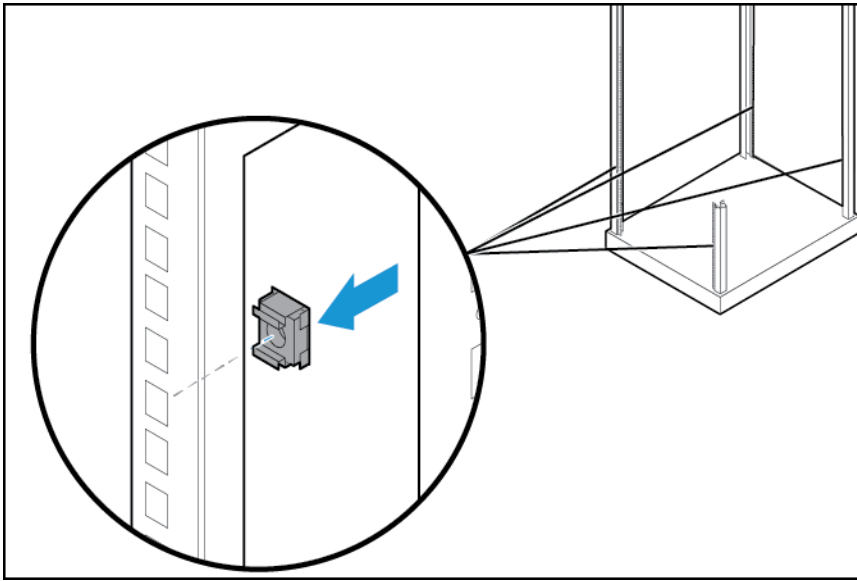
1. Verify each directional-specific rail matches with the side of a rack post.
The following text is imprinted on both ends of the rails: **FRONT-R** and **FRONT-L**.
2. Align one end of the rail channel with the holes of the rack post, and then push to seat the locating pins in the rack.
3. Expand the rail to connect to the other end of rack post.
4. Secure the front and rear of the rail assembly to the rack post using four T25 Torx shoulder screws (two in front, two in back) in the top and bottom holes. Tighten the shoulder screws with a torque of 19 in-lbs.
5. Install the middle support bracket before transporting:
 - a. Align the middle support bracket holes with the top holes of the rail(s). The orientation of the middle support bracket is neutral.
 - b. Insert and tighten screws.

Figure 19 Installing the Middle Support Bracket



6. Repeat steps 1 through 5 for the other rail.
7. Snap one cage nut into the rack hole two positions above the rail on both sides.

Figure 20 Installing the Cage Nut



8. Check both sides at the front and back of the rack to ensure all screws are installed properly.

Installing Enclosures

The storage system can contain the following types of drive and controller node enclosures: 2U and 4U enclosures.



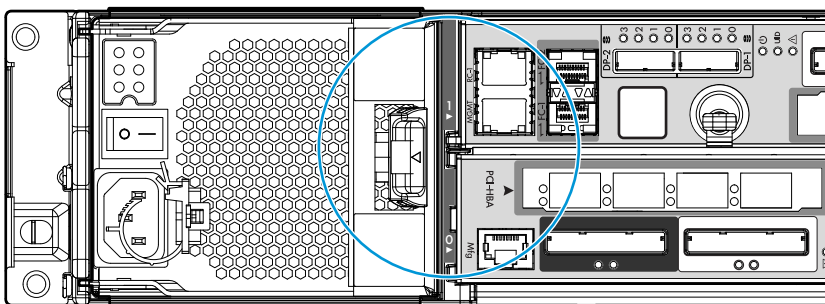
WARNING! The enclosure is heavy. Lifting, moving, or installing the enclosure requires two people.

NOTE: When installing a 7400 (two-node) enclosure, two units of space must be reserved above the enclosure for an upgrade to a four-node system. Labels are provided to secure on two filler panels to reserve this space.

To install an enclosure on the rack:

1. Determine that the enclosure is oriented correctly by looking at the rear of the enclosure. Verify the node numbering by reviewing the controller node label on both edges of the enclosure slot.

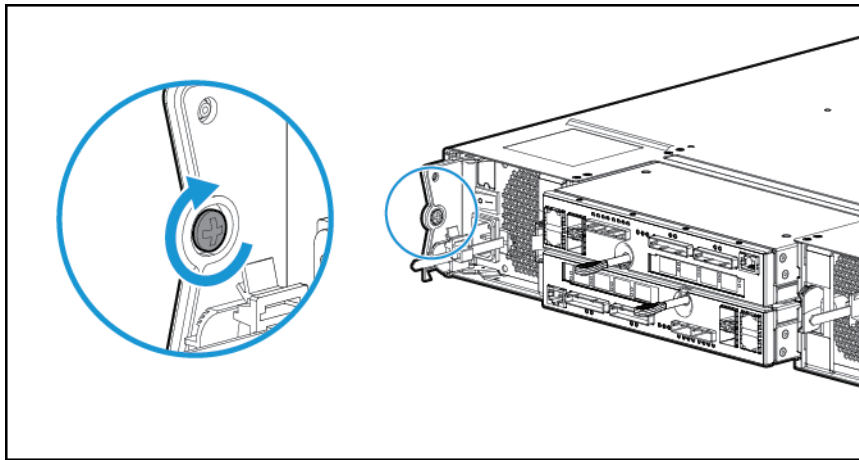
Figure 21 Verify Controller Node Numbering



2. At the front of the enclosure, remove the yellow bezels on each side of the enclosure to expose the mounting holes.
3. Slide the enclosure onto the rail shelves. Use both hands to handle the enclosure.

4. At the front of the enclosure, do one of the following steps:
 - For 2U enclosures, insert one Torx M5 (long) screw into the mounting hole on each side to secure the enclosure to the rack. Tighten the screws to a torque level of 13 in-lbs.
 - For 4U enclosures, insert two Torx M5 (long) screws into the mounting holes on each side to secure the enclosure to the rack (on each side, one screw goes into the rail and the other to the cage nut). Tighten the screws to a torque level of 13 in-lbs.
5. At the rear of the enclosure, tighten the two M5 Torx (short) screws on the sides of the enclosure. Tighten the screws to a torque level of 13 in-lbs. See [Figure 22 \(page 39\)](#).

Figure 22 Tightening the Hold-Down Screw



NOTE: Due to limited access, use a short length or right angle torx bit screwdriver to tighten the hold-down screws.

6. Reinsert the yellow bezels on each side of the enclosure.
7. Connect power and data cables.

⚠ CAUTION: Do not power on without completing the remainder of the physical installation or upgrade.

8. Remove the blank filler panels before installing disk drives into the slots.
9. To ensure proper thermal control, install blank filler panels into any empty slots.

Guidelines for Installing Disk Drives in Disk Enclosures

This section provides information about the requirements and installation order for disk drives in SFF and LFF drive enclosures.

Only 2.5-inch drives can be installed in HP 3PAR 7200/7400 controller node enclosures and HP M6710 (2U) drive enclosures. The 3.5-inch drives can be installed only in 4U M6720 drive enclosures.

For all drive enclosures, the slots should be balanced. For example, if two drives are added to DP-1, two drives should be added to a drive enclosure attached to DP-2. Drives should be added so that all enclosures are balanced with an even number of drives in each enclosure.

For all drive enclosures, the proper system temperature must be maintained. To ensure proper thermal control, blank filler panels must be installed in any slots without drives.

Guidelines for Allocating and Loading Order (2.5 inch SFF disk drive)

For a node or M6710 Drive Enclosure, drives must be added in identical pairs, starting from slot 0 on the left and filling to the right, leaving no empty slots between drives. The best practice when

upgrading or building a system is to add the same number of identical drives to every drive enclosure in the system, with a minimum of three disk drive pairs in each drive enclosure.

Figure 23 HP M6710 Drive Enclosure (2U24) Disk Drive Placement Order



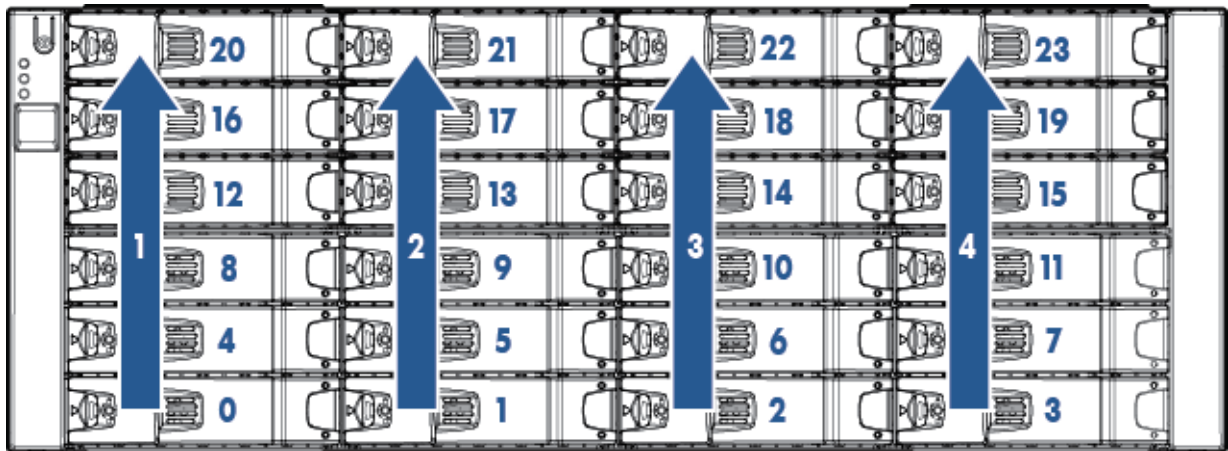
Guidelines for Allocating and Loading Order (3.5 inch Large Form Factor (LFF) disk drive)

Columns of drives in an HP M6720 Drive Enclosure must be of the same device type (NL or SSD). NL disk drives and SSDs must not be mixed in the same column. For an HP M6720 Drive Enclosure, drives must be installed in identical pairs, starting from the slot at the bottom of the left column and filling up with drives of the same type, leaving no empty slots between drives in the column. Populate drives in the columns from bottom to top and from left to right.

The best practice when upgrading or building a system is to add the same number of identical drives to every HP M6720 Drive Enclosure in the system, with a minimum of two drives added to each LFF chassis. The minimum supported upgrade for a 7400 with one or more expansion HP M6720 Drive Enclosures is two identical drives added to adjacent slots in the same column of the same chassis. If there are more than one expansion enclosure in the system, add the drives in pairs so they are balanced across the device ports, and then added to enclosures on the same port.

The LFF drives added to the HP M6720 Drive Enclosure on each node pair should be balanced across node pairs, then across device ports on each node pair, and finally by enclosures on the same port.

Figure 24 M6720 Drive Enclosure (4U24) Disk Drive Placement Order



Guidelines for Allocating and Loading Order (Mixed SFF and LFF disk drives)

In a storage system with mixed HP M6710 and M6720 Drive Enclosures there is a minimum of three pairs of drives for each drive enclosure. Additional upgrades can include all SFF, LFF or a mixture of SFF and LFF drives but, they must be in pairs of the same drive type. Follow the loading order as in the sections above for SFF and LFF drives.



WARNING! If the StoreServ is enabled with the Data-at-Rest (DAR) encryption feature, only use the self-encrypting drives (SED). Using a non-self-encrypting drive may cause errors during the upgrade process.

For information about encrypting the hard drives with an enhanced security feature known as Data-At-Rest (DAR) encryption, see [“Enhancing Security with Data Encryption” \(page 107\)](#).

For information about adding drive enclosures, see [“Adding Disk Drives and Expansion Drive Enclosures” \(page 108\)](#).

Installing a Disk Drive

Before beginning this procedure, review how to load the drives based on drive type, speed, and capacity. See [“Guidelines for Installing Disk Drives in Disk Enclosures” \(page 39\)](#).

NOTE: To avoid any cabling errors, all drive enclosures must have at least one or more hard drives installed before powering on the enclosure.

△ **CAUTION:** Blank disk drive filler panels are provided and must be used if all slots in the enclosure are not filled with disk drives.

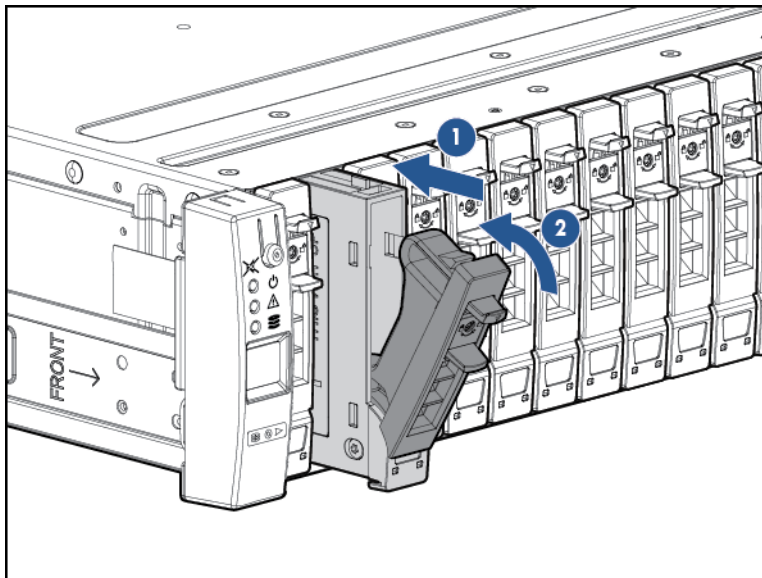
△ **CAUTION:** To avoid potential damage to equipment and loss of data, handle disk drives carefully.

Each disk drive includes a green and amber LED on the front to indicate disk drive status.

Installing a 2.5 inch Disk Drive (SFF)

1. Press the handle latch to open the handle.
2. Insert the disk drive into the enclosure with the handle opened from the top in the vertical position.
3. Slide the disk drive into the enclosure until it engages. Push firmly until it clicks.

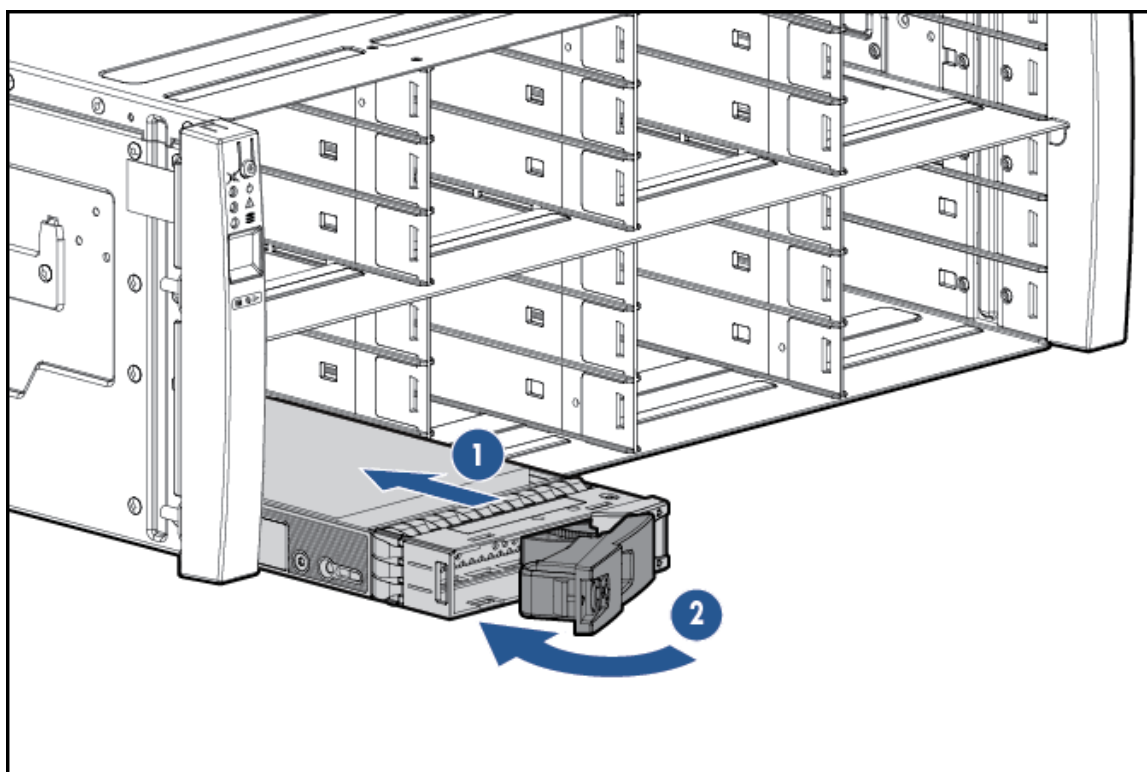
Figure 25 Installing a 2.5 inch Disk Drive



Installing a 3.5 inch Disk Drive (LFF)

1. Press the handle latch to open the handle.
2. Position the disk drive so the handle opens from the left, and slide it into the enclosure.
3. Push firmly until the handle fully engages and clicks.

Figure 26 Installing a 3.5 inch disk drive



Installing the Service Processor in the Storage System

The HP 3PAR Service Processor consists of the following:

- A standard HP Server
- A 1U Rail Kit for that specific server

NOTE: The SP ID is the HP 7-digit serial number of the array located on the top front of the server and in a pull-out placard in the front of the server. The serial number is preceded by **SP000**. For example, if the 3PAR serial number is 1614983, enter **SP0001614983**.

Use these procedures when installing the HP 3PAR Service Processor into an existing rack. Before you begin, verify that you have the proper service processor 1U Mounting Kit (PN 683811-001).

The service processor rail kit supports a variety of products in round, square, or threaded-hole racks. The following table identifies any tools required for each type of rack.

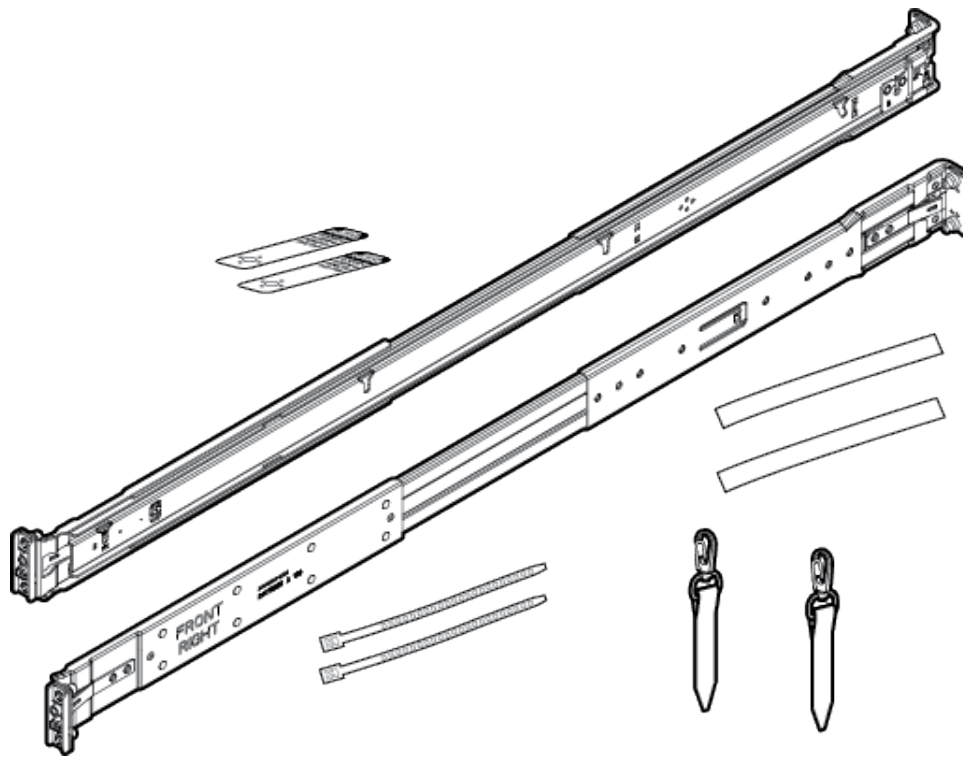
Table 4 Rack Types

Rack Type	Tools Required	Picture
Round hole	None	
Square hole	None	
Threaded hole	Screwdriver	

The following components are included in the kit:

- Slide mounting rails
- Screws
- Cage nuts (for the round-hole rack)
- Cable management straps
- Labels

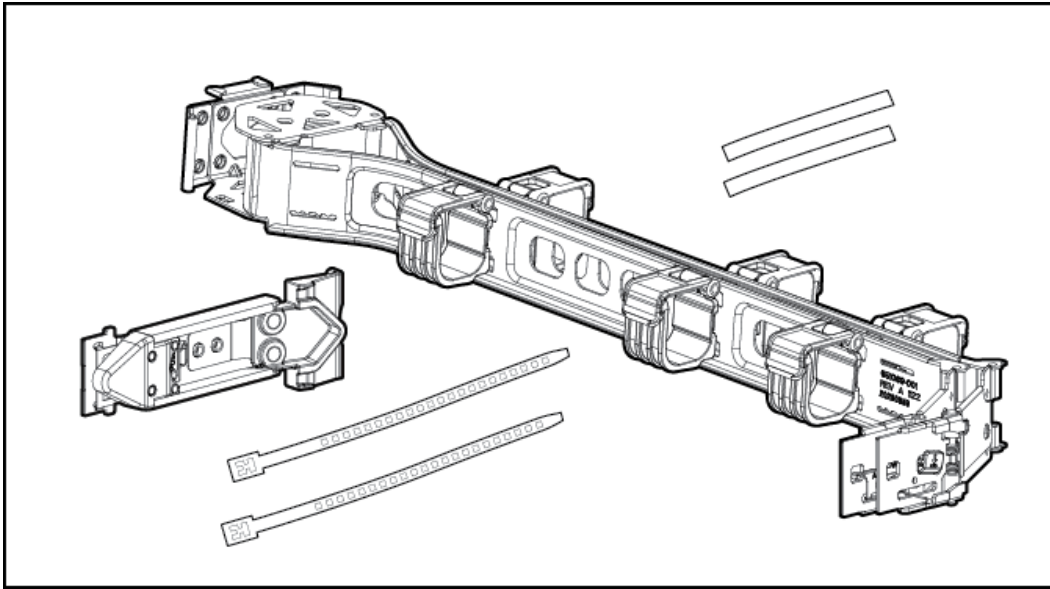
Figure 27 Rail Kit Components (PN 683811-001)



In addition to the supplied items, you may also need the following:

- Screws fitting a threaded-hole rack
- Screwdriver
- Optional cable management arm (see [Figure 28 \(page 45\)](#))

Figure 28 Cable Management Arm



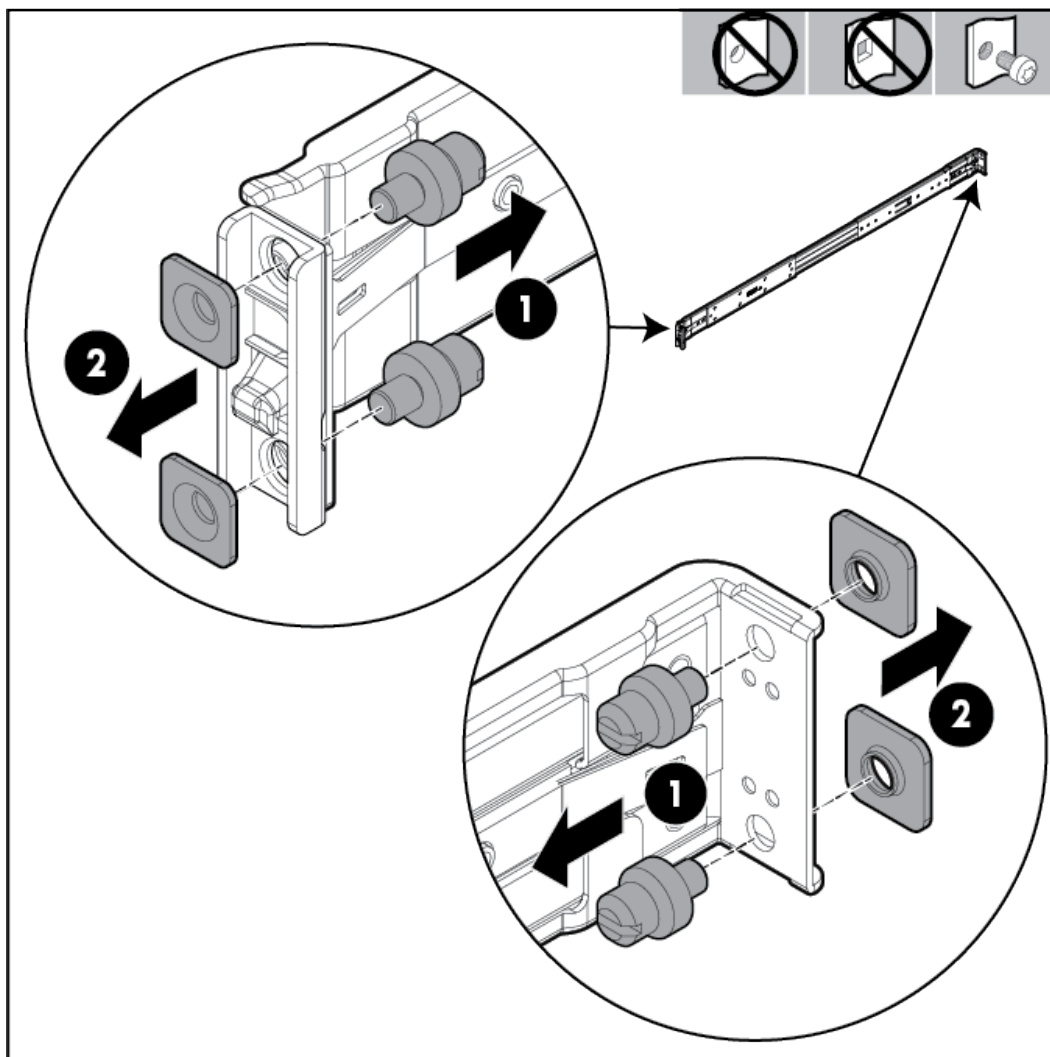
⚠ WARNING! To avoid risk of injury or damage to the equipment, do not stack anything on top of rail-mounted equipment or use it as a work surface when it is extended from the rack.

⚠ CAUTION: Always plan the rack layout before installing the equipment. See *HP 3PAR StoreServ 7000/7450 Cabling Configuration Guide* for the best practices for node and drive enclosure positioning in specific configurations.

To install the rail kit and service processor:

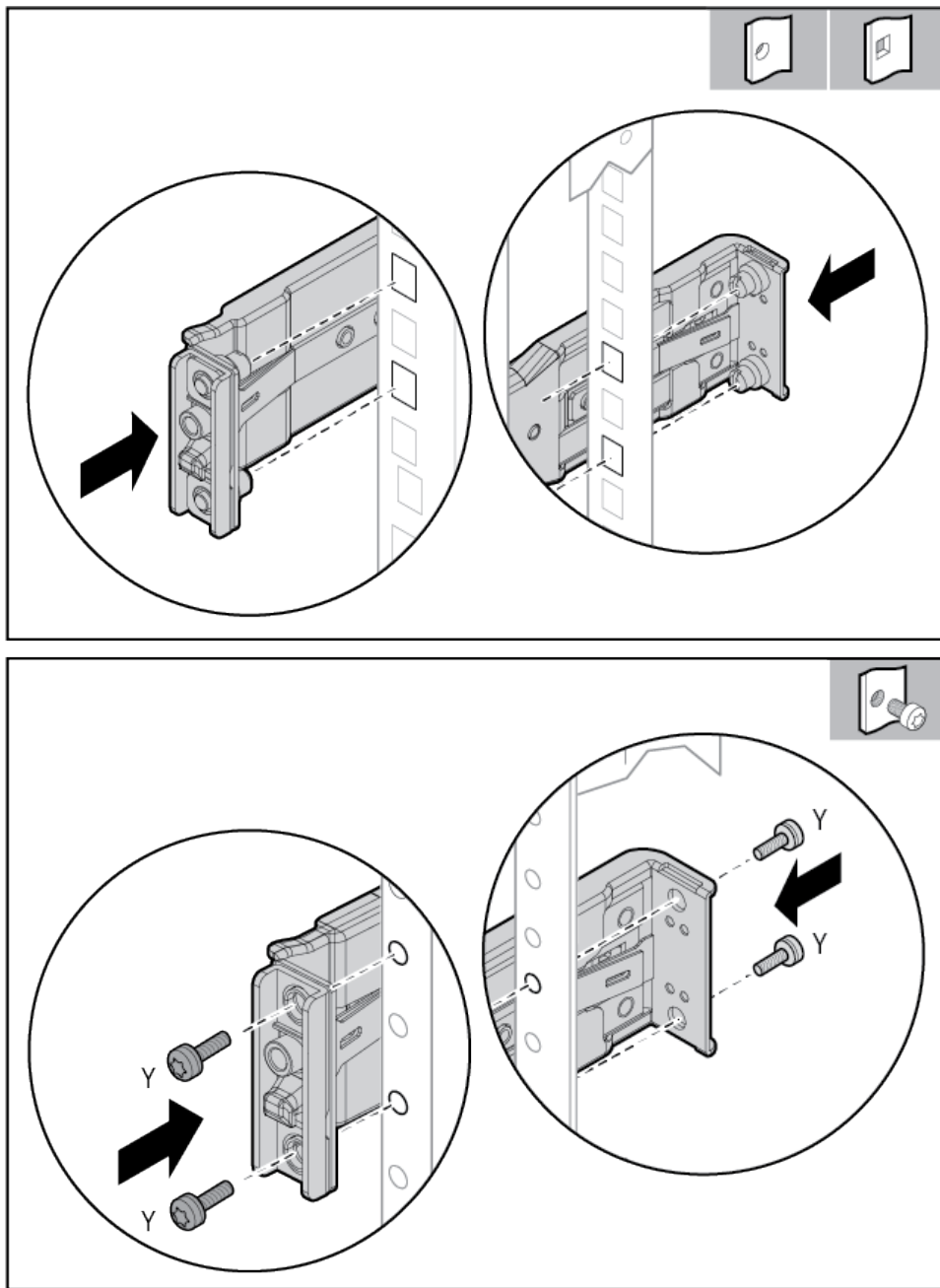
1. Adjust the length of the mounting rails.
2. Install the threaded-hole cage nuts and rail mounting pins into the rack hole positions where you want to install the component. Use two cage nuts and two rail mounting pins on the front of each rail, and two cage nuts and two rail mounting pins on the rear of each rail.

Figure 29 Installing Cage Nuts and Rail Mounting Pins



3. Align the mounting rail with the cage nuts, and fasten the mounting rails to the rack with the proper screws.

Figure 30 Mounting and Fastening the Mounting Rails

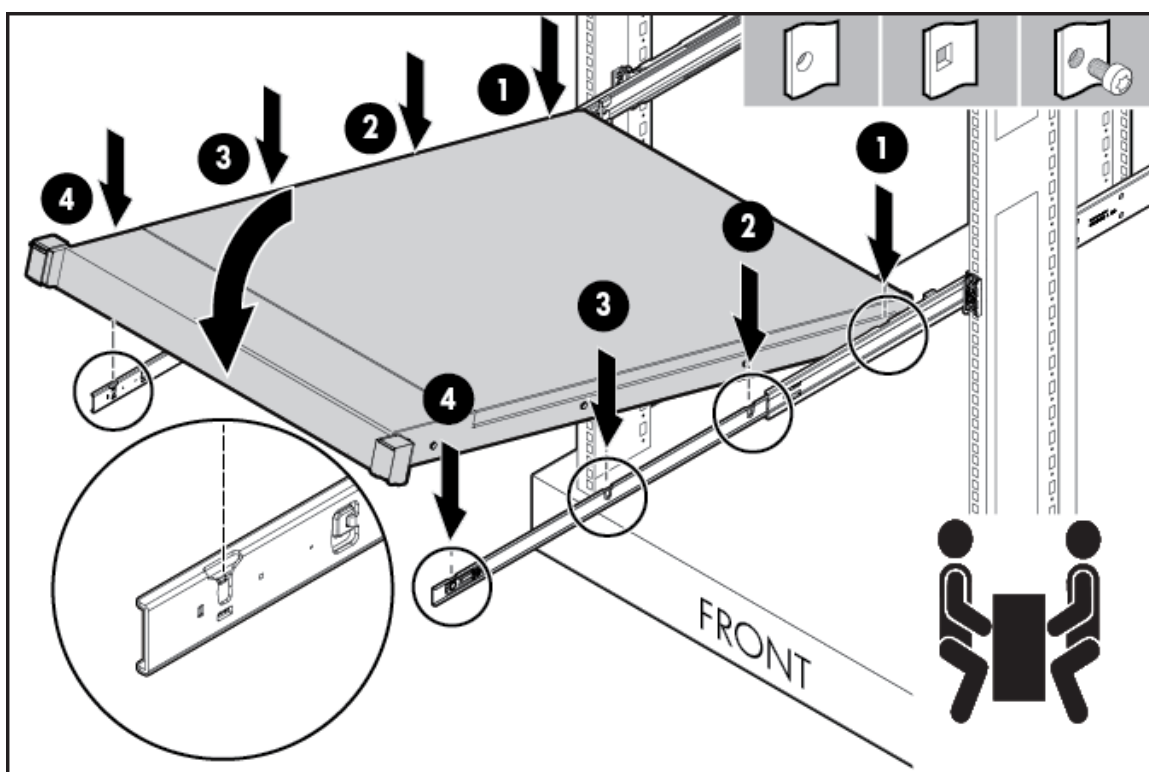


4. Repeat steps 1 through 3 for the other mounting rail.

⚠ WARNING! To prevent the risk of injury or equipment damage, inspect the rack to ensure that it is adequately stabilized before installing the service processor.

5. Install the side rails on each side of the service processor by aligning each side rail to the component, and then snapping it into place.

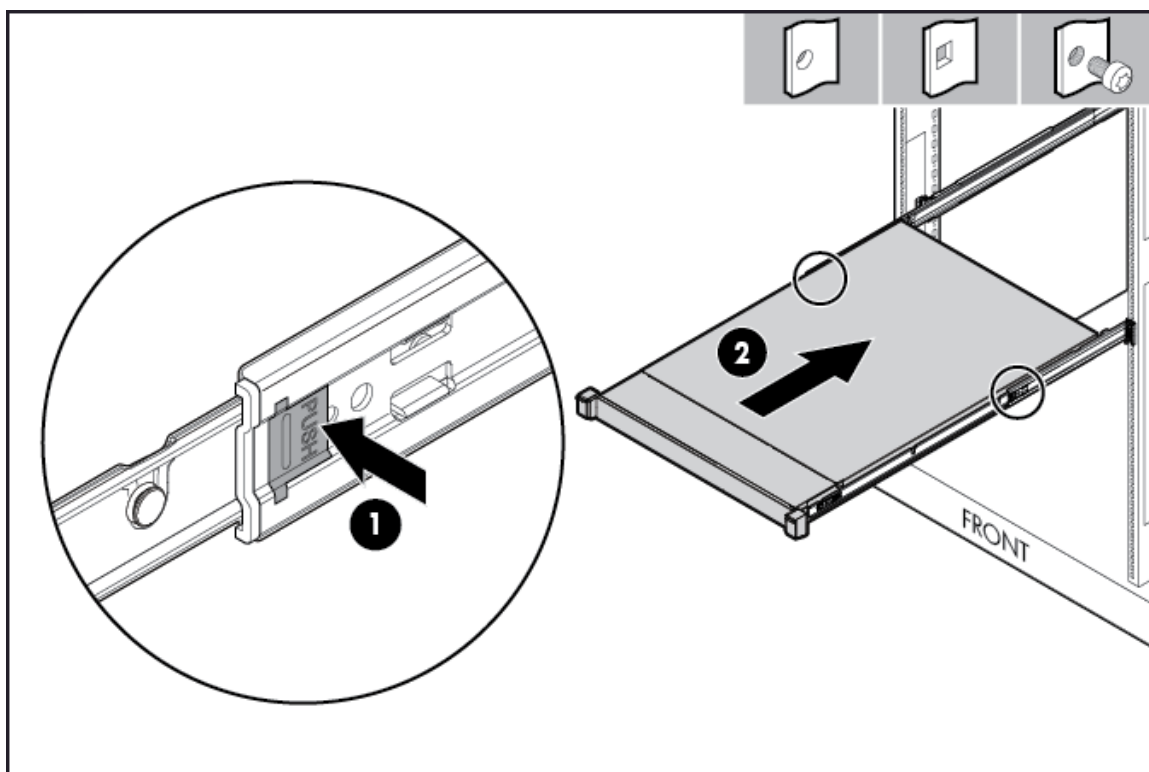
Figure 31 Installing the Service Processor (PN 683811-001)



NOTE: Align the rail pin guides (PN 683811-001) with the slots on the mounting rails before setting the service processor.

6. Slide the service processor onto the mounting rails and into the rack.

Figure 32 Sliding the Service Processor into the Rack (PN 683811-001)



7. Fasten the service processor to the rack.
8. (Optional) Install the cable management arm. See the instructions provided in the kit.
9. Use the straps provided in the kit to secure all fiber and Ethernet cables. Securing the cables prevents any improper disconnection or damages during operation.
10. Connect the power cord to the facility power source. Do not power on the SP at this time.



WARNING! To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
 - Plug the power cord into a grounded (earthed) electrical outlet where it is accessible at all times.
 - Unplug the power cord from the power supply to disconnect power to the equipment.
 - Do not route the power cord through a walkway area or adjacent to other hardware components that may pinch or damage the cord. Pay close attention to the plug, electrical outlet, and the point where the cord extends from the component.
-

Continue on to [“Cabling the Storage System” \(page 50\)](#).

7 Cabling the Storage System

For more information about cabling drive enclosures (SAS) before you continue to cable the system, visit www.hp.com/go/3par. Scroll to *Support*, and click *HP 3PAR StoreServ 7000 Support* and then *Manuals*. Then scroll to *Setup and install — general* and select the specific *HP 3PAR StoreServ 7000 Storage Cabling Configuration Guide*.

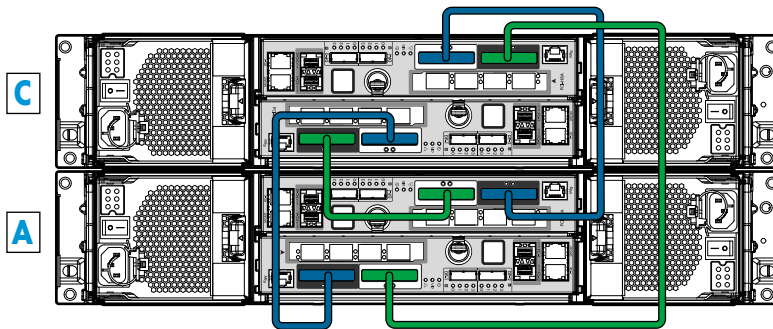
Cabling Controller Nodes

Nodes are numbered 0 to 3 from bottom to top. Connections between Nodes 0 and 1 and Nodes 2 and 3 use four large interconnect cables.

These cables are directional and must be installed correctly for the storage system to function properly. When inserting the cables, you should hear a click to confirm the cable is correctly installed. If you have to force the connector, the connector is upside down and needs to be inverted. The direction of the cable connection is indicated by labels on either end of the cable.

In [Figure 33 \(page 50\)](#), see label **A** for interconnecting node 0 or 1. See label **C** for interconnecting node 2 or 3.

Figure 33 Interconnecting the Controller Nodes



Host/Ethernet Cables

⚠ WARNING! Each controller node supports one Ethernet connection to a switch or hub. Separate connections from the Ethernet switch or hub to at least two controller nodes are required to support redundancy. With redundancy, one IP address is shared between the two connections, and only one network connection is active at a time. If the active network connection fails, the IP address is automatically moved to the surviving network connection.

⚠ WARNING! At a minimum, the storage system requires one Fibre Channel (or iSCSI) connection from a host computer to a controller node. HP recommends separate connections from each host computer to each of the controller nodes in the storage system, with connections distributed evenly across all nodes.

Table 5 External Controller Node Connections

Connection Type	Minimum Configuration	Recommended Configuration
Ethernet	Connection from the Ethernet switch or hub to two controller nodes	See the section <i>Supported Network Topologies</i> in <i>HP 3PAR StoreServ 7000 Storage Site Planning Manual</i> .
Fibre Channel	Connection from a host computer to one controller node	Separate connections from host computers to each node, through a switch, with connections distributed evenly across all nodes ¹
Maintenance	None	Varies according to system and network configuration

¹ To provide redundancy and to permit online software upgrades, both controller nodes in a node pair (for example, nodes 0 and 1 or nodes 2 and 3) must maintain connections to each host server.

Table 6 (page 51) describes the maximum supported Fibre Channel cable length based on the cable size and port speed.

Table 6 Cable Limitations for Fibre Channel Host Connectivity

Cable Size	Speed	Cable Length Limit
62.5 micron	2 Gbps	100 meters
62.5 micron	4 Gbps	70 meters
62.5 micron	8 Gbps	21 meters
50 micron	2 Gbps	300 meters
50 micron	4 Gbps	150 meters
50 micron	8 Gbps	50 meters
50 micron	16 Gbps	35 meters

Cabling Expansion Cabinets

For more information about cabling drive enclosures in expansion cabinets, see the following documents:

- *HP 3PAR StoreServ 7000/7450 Storage Cabling Configuration Guide A: 2 Node Systems with Small 2.5-inch Drive Enclosures*
- *HP 3PAR StoreServ 7000/7450 Storage Cabling Configuration Guide B: 2 Node Systems with Large 3.5-inch Drive Enclosures*
- *HP 3PAR StoreServ 7000/7450 Storage Cabling Configuration Guide C: 2 Node Systems with Mixed-Size Drive Enclosures*
- *HP 3PAR StoreServ 7000/7450 Storage Cabling Configuration Guide D: 4 Node Systems with Small 2.5-inch Drive Enclosures*
- *HP 3PAR StoreServ 7000/7450 Storage Cabling Configuration Guide E: 4 Node Systems with Large 3.5-inch Drive Enclosures*
- *HP 3PAR StoreServ 7000/7450 Storage Cabling Configuration Guide F: 4 Node Systems with Mixed-Size Drive Enclosures*

Visit www.hp.com/go/3par. Scroll to *Support*, and click *HP 3PAR StoreServ 7000/7450 Support* and then *Manuals*. Then scroll to *Setup and install — general* and select the specific *HP 3PAR StoreServ 7000/7450 Storage Cabling Configuration Guide*.

Cabling the Service Processor

Connect a customer-supplied Ethernet cable to the lowest port on the server. Connect the power cable to PDU, but *do not* power on at this point.

⚠ WARNING! Do not power on the service processor.

The following icon is typical, but it can vary by server.

Figure 34 Connection Icon



Cabling Power to the Storage System

⚠ WARNING! Before you begin cabling the power cords, verify your power connections are set up correctly. See [“Verifying Power Connections” \(page 54\)](#).

When routing PCM power cords, ensure power redundancy is maintained by connecting each PCM within a shelf to a different PDU. When observed from the rear, the left side cabling (ID #0) is black, and the right side cabling (ID #1) is gray.

⚠ WARNING! The PCM latch can damage any cables that are routed in such a way that when the PCM latch handle is closed, it will cut into any cable that becomes wedged between the latch and the rack post. Keep the cables clear from the PCM latch mechanism.

NOTE: When installing cabling, ensure clear access to all storage system components. All power cords need to be tied and kept behind the rail column in order to access the components during servicing.

To cable the power cables:

1. Locate the power cord for each PCM.

NOTE: Before inserting the power cords into the PCMs, verify the PCM power switch is set to 0 (off).

2. Route the main power cords to a power strip or PDU. Ensure the routed cords maintain proper service clearance.
3. Insert each end of the power cord into the power strip/PDU and PCM. Fasten the PCM power cord using the restraining clip on each PCM.

NOTE: Do not power on the PCMs at this time.

Cabling the Power Distribution Unit

PDUs can be mounted horizontally below the enclosures at the bottom of the rack. Each PDU AC cord connects to the appropriate outlet based on the type of cord and power requirements to supply power to the storage system.

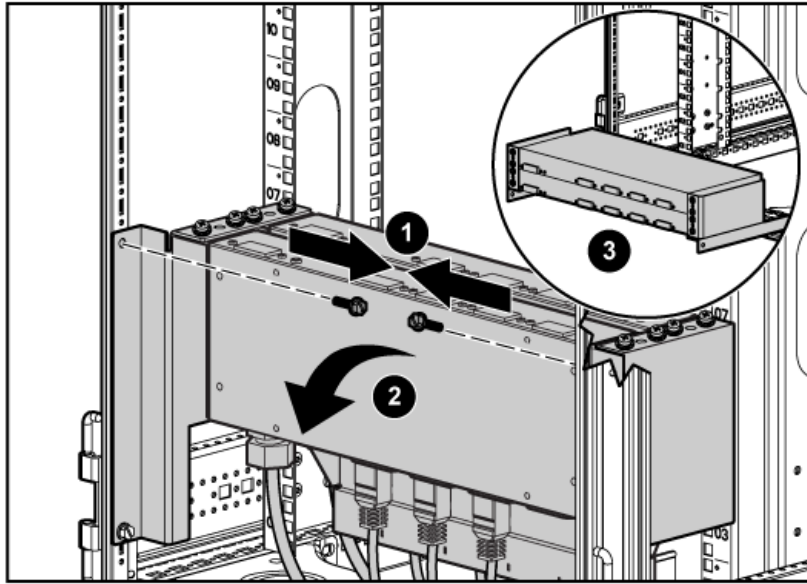
To access the vertically mounted PDUs or servicing area, the PDUs can be lowered out of the rack.

1. Remove the two top mounting screws.
2. Pull down on the PDU to lower.

NOTE: If necessary, loosen the two bottom screws to unhinge the bracket before pulling down the PDU.

3. Ensure the PDUs are in a fully lowered position before accessing.

Figure 35 Disengaging the PDU Pivot Brackets



Cabling the Power Strips

Power strips can be located on the side of the rack to supply power to the PCMs. Power strips are connected to PDUs. Do not exceed the capabilities of power strips and PDUs.

Continue on to [“Verifying Setup and Powering On the Storage System”](#) (page 54).

8 Verifying Setup and Powering On the Storage System

This section describes the verification of procedures for setting up and powering on all components in the storage system.

NOTE: To avoid any cabling errors, all drive enclosures must have at least one or more hard drives installed before powering on the enclosure.

Verifying Setup

To complete the installation, you must verify the power connection and final positioning and then power on the storage system.

Verifying Power Connections

Verify the following before powering on the storage system:

- Redundant Power
- Power cord connections
- AC cord connections
- Main power cords

NOTE: Secure the power cord with the retainer by placing the wire into the circular loop and cinching it closed. You can slide the retainer by lifting the small tab behind the circular loop.

Redundant Power

The racks use redundant PDUs and power supplies to provide power redundancy throughout the system. Before powering on the storage system, verify that the system has a valid redundant power configuration connected to independent electrical power providers. Each of the PDUs must connect to a power socket with power being separately supplied by an independent electrical power source.

⚠ CAUTION: Ensure the storage system does not exceed the ratings of the power sources and PDUs, and adheres to the guidelines described in *HP 3PAR StoreServ 7000 Storage Site Planning Manual*.

Power Cord Connections

Each storage system arrives with all internal power cords configured and connected. Before powering on the storage system, verify the following:

- The AC cords are correctly configured and properly connected to the component
- The AC cord locks and cable ties on the PDUs and PCMs are properly connected
- If you have a physical SP, verify it is properly connected to the PDU

Repositioning the Storage System

Install the rear door of the storage system and filler panels that may not have been completed during installation. If you have not positioned the storage system in a permanent operating location, as described in [“Positioning the Cabinet” \(page 31\)](#), place the storage system in its final position before powering on.

Acclimating the Storage System

Before powering on the storage system, the system may require up to 24 hours to acclimatize to the new operating environment when outside-to-inside conditions vary significantly. If the system or its components may have experienced environmental changes during the transit, allow enough time for the system to acclimatize before proceeding with the power-on sequence.

-
- ⚠ CAUTION:** To prevent potential damage to system hardware, do not power on the storage system until it is fully acclimatized. If condensation is present after the 24-hour acclimatization period, wait for all condensation to fully evaporate before completing the power-on sequence.
-

Powering On the Storage System

1. Set the circuit breakers on the PDUs to the ON position.
2. Set the switches on the power strips to the ON position.

NOTE: Some power strips may not have power switches.

3. Power on the service processor.
4. Power on the drive enclosure PCMs.
5. Power on the node enclosure PCMs.
6. After approximately 10 minutes, allowing time for the system to boot and the cache batteries to charge, verify the status of the LEDs as described in [“Verifying LED Status” \(page 56\)](#).

Verifying LED Status

1. At the front of the storage system, verify the bezel and disk drive LEDs are illuminating green.

NOTE: If any module fault or disk drive LEDs are not green, do not proceed until the problem is resolved.

Figure 36 Bezel LEDs

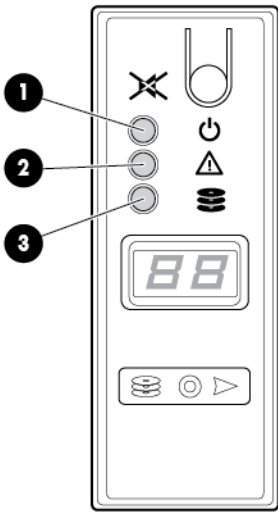


Table 7 Identifying Bezel LEDs

Item	Description
1	Power indicator
2	Module fault
3	Disk drive status

Figure 37 Disk Drive LEDs

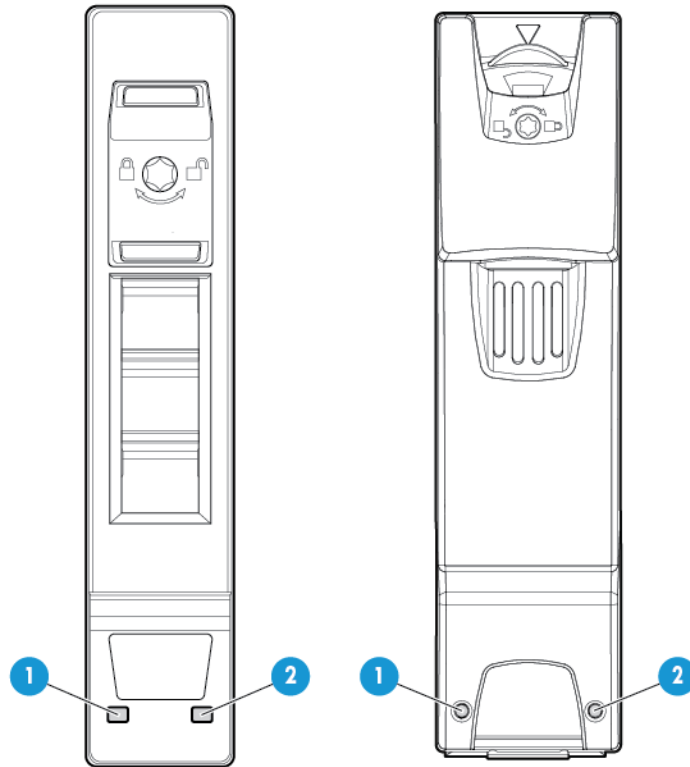


Table 8 Identifying Disk Drive LEDs

Item	Description
1	Amber LED indicates a fault.
2	Green LED indicates the system is ready.

- At the rear of the storage system, verify the controller node, I/O modules, and PCM LEDs are lit green. The controller node LEDs should be blinking green once per second. The green LED of each node will blink together when the storage cluster is properly formed.

Figure 38 Node Enclosure PCM LEDs

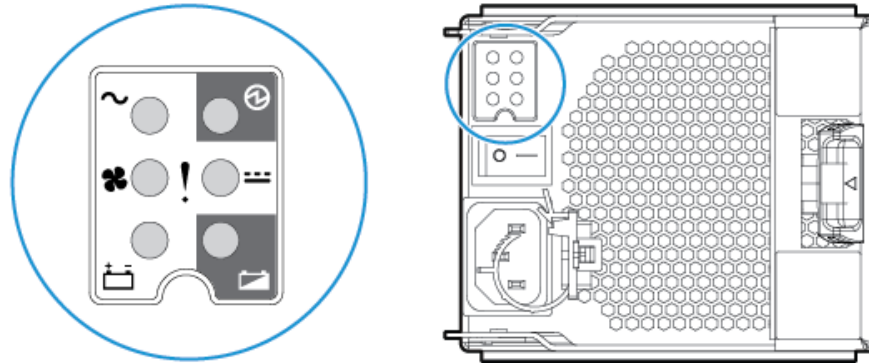


Table 9 PCM LED Descriptions

Icon	LED	Appearance		Indicates
	AC input fail	Amber	On	No AC power or PCM fault
			Flashing	Firmware download
	PCM OK	Green	On	AC present and PCM On / OK
			Flashing	Standby mode
	Fan Fail	Amber	On	PCM fail or PCM fault
			Flashing	Firmware download
	DC Output Fail	Amber	On	No AC power or fault or out of tolerance
			Flashing	Firmware download

Table 9 PCM LED Descriptions *(continued)*

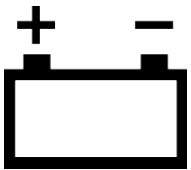
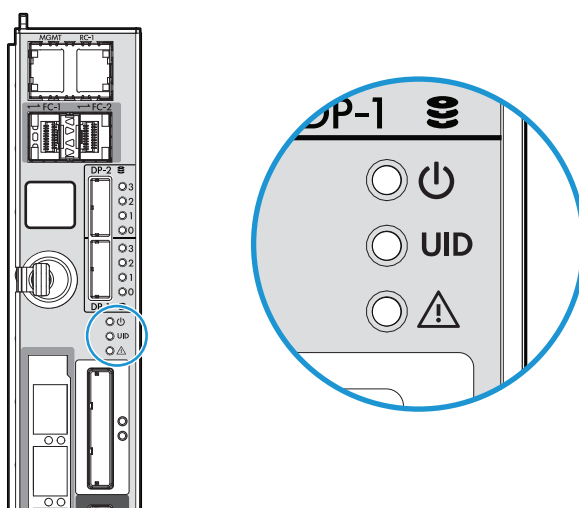
Icon	LED	Appearance		Indicates
	Battery Fail	Amber	On	Hard fault (not recoverable)
			Flashing	Soft fault (recoverable)
	Battery Good	Green	On	Present and charged
			Flashing	Charging or disarmed

Figure 39 Controller Node LEDs



NOTE: The figure shows an HP 3PAR 7200 controller node as an example.

Node Interconnect Ports

The node interconnect ports are used only with 7400 4-Node systems.

Figure 40 7400 4-Node LEDs

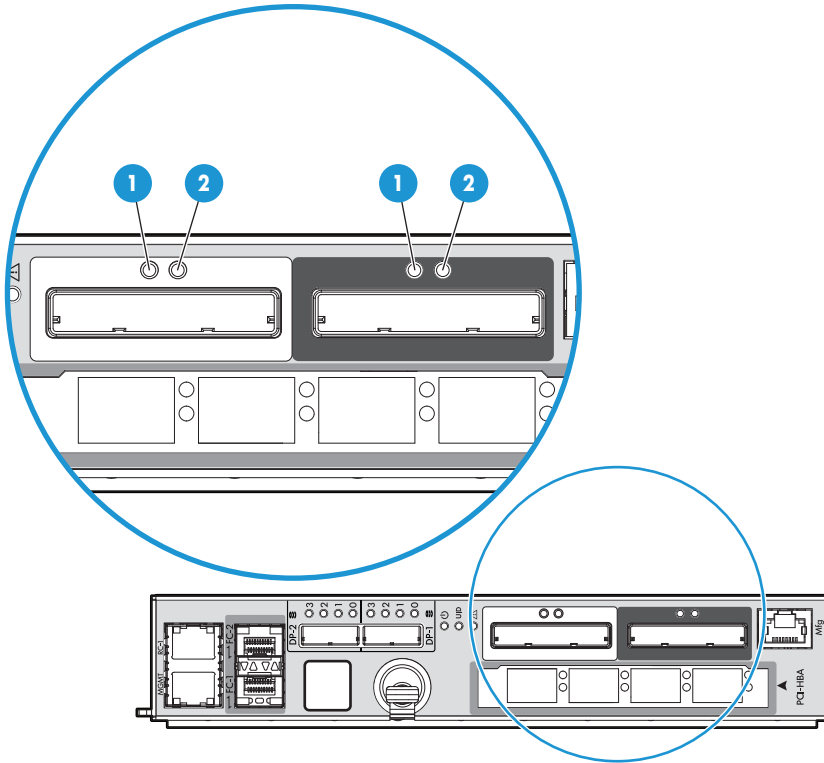


Table 10 Node Interconnect Ports LEDs

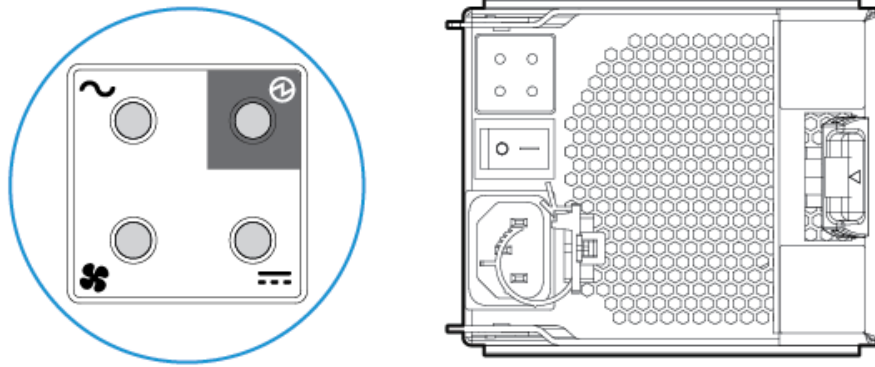
Item	Description
1	Green LED
2	Amber LED

Solid (not flashing) green LEDs indicate normal operation. Flashing amber LEDs can be caused by any of the following:

- Cluster link cabling error
- Controller node in wrong slot
- Serial number mismatch between controller nodes

Drive Enclosure LEDs

Figure 41 Drive Enclosure PCM LEDs



CAUTION: Do not proceed without first correcting all fault indications (except for PCM batteries).

NOTE: The batteries are fully charged during shipment. The batteries may lose some charge and show a degraded status immediately when power is applied. This is a temporary condition. Proceed with the system initialization process and software installation. Check the LEDs again when the installation is complete.

The cluster is not formed until the storage system software installation has been performed.

Identifying Service Processor LEDs

The HP 3PAR SP (Proliant DL320e) LEDs are located at the front and rear of the SP.

Figure 42 Front Panel LEDs

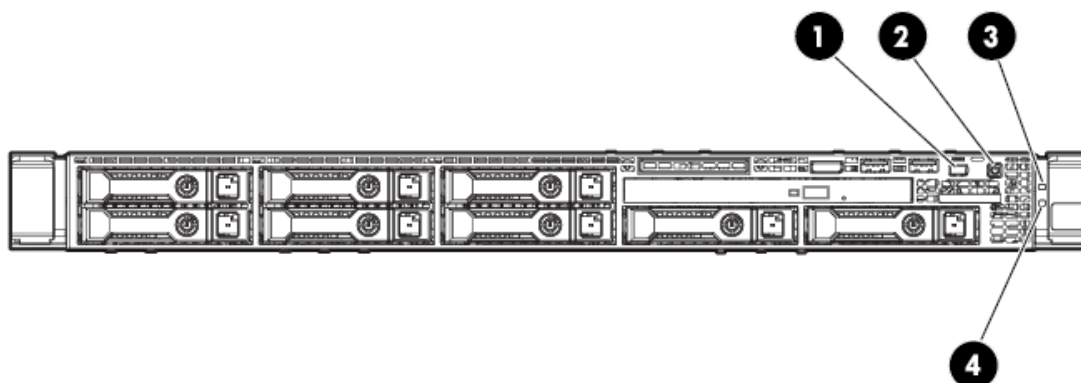


Table 11 Front panel LEDs

Item	LED	Appearance	Description
1	UID LED/button	Blue	Active
		Flashing Blue	System is being managed remotely
		Off	Deactivated
2	Power On/Standby button and system power	Green	System is on
		Flashing Green	Waiting for power
		Amber	System is on standby, power still on
		Off	Power cord is not attached or power supplied has failed
3	Health	Green	System is on and system health is normal
		Flashing Amber	System health is degraded
		Flashing Red	System health is critical
		Off	System power is off
4	NIC status	Green	Linked to network
		Flashing Green	Network activity
		Off	No network link

Figure 43 Rear Panel LEDs

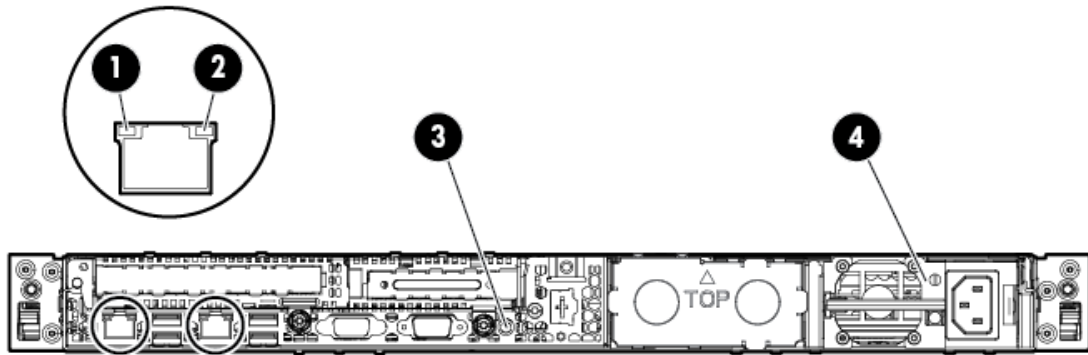


Table 12 Rear panel LEDs

Item	LED	Appearance	Description
1	NIC link	Green	Link
		Off	No link
2	NIC status	Green or Flashing Green	Activity
		Off	No activity
3	UID LED/button	Blue	Active
		Flashing Blue	System is being managed remotely
		Off	Deactivated
4	Power supply NOTE: May not be applicable to your system (for hot-plug HP CS power supplies ONLY)	Green	Normal
		Off	Off = one or more of the following conditions: • Power is unavailable • Power supply has failed • Power supply is in standby mode • Power supply error

For more information about LED status, see *Understanding LED Indicator Status* in the *HP 3PAR StoreServ 7000 Storage Service Guide*.

Continue on to [“Initializing the Service Processor”](#) (page 64).

9 Initializing the Service Processor

The SP supports all actions required for maintenance of the storage system. The service processor provides real-time, automated monitoring and remote access to HP 3PAR Support in order to diagnose and resolve potential problems. An HP 3PAR StoreServ system can include either a virtual or physical SP.

Use the following table as guidance for setting up a specific type of service processor.

Type of Service Processor	Action
Virtual Service Processor (VSP)	See “Connecting to a Virtual Service Processor” (page 64).
Physical Service Processor	See “Connecting to a Physical Service Processor” (page 67).

Connecting to a Virtual Service Processor

Prerequisites for Using a VSP

Before you connect to a VSP, review and complete the following tasks:

- Ensure the ESXi time and date are properly set, either through the Network Time Protocol (NTP) server or manually through the ESXi console. Setting the correct date and time ensures VSP real-time monitoring and access.
- Verify both the VSP and StoreServ system are on the same subnet.
- Verify the VMware vSphere client is available before deploying the VSP OVF file. Access your ESXi server to download the VMware vSphere client or visit <https://my.vmware.com/web/vmware/downloads>.

NOTE: Open Virtualization Format (OVF) is an open standard for packaging and distributing virtual machines or software.

- Verify the HP 3PAR Virtual Service Processor software DVD is available. If you cannot locate the DVD, contact HP Support through <http://www.hp.com/support> and request assistance with the HP 3PAR StoreServ 7000 Storage product.

⚠ WARNING! Do not install the VSP on the same StoreServ 7000 array because it may lead to the inability of properly managing the array when connectivity to the storage is unavailable. Provision the VSP on a VMware server and ensure the VSP boots from the local disk of the assigned VMware server and not from the StoreServ 7000 LUNs.

⚠ CAUTION: VMware vMotion is not a supported application. Do not use vMotion to migrate the VSP from one physical server to another. Using vMotion may cause communication failure and interrupt system service.

Deploying the VSP OVF File

NOTE: The virtual service processor supports VMware ESXi versions 4.1 and later. For more specific VMware environment support, see the VMware compatibility matrix on the VMware website. The following set of instructions may vary depending on the version of VMware ESXi you are using.

1. Insert the HP 3PAR Virtual Service Processor software DVD.
2. In the VMware vSphere Client window, select **File > Deploy OVF template**.
3. On the **Source** page, click **Browse** to locate the OVF file on the DVD.
4. Select the OVF file, click **Open** and then click **Next**.
5. On the **OVF Template Details** page, verify the OVF template is selected, and then click **Next**.
6. On the **Name and Location** page, create a name for the VSP, and then click **Next**.
7. On the **Storage** page, select a storage destination for the virtual machine files, and then click **Next**.

NOTE: When deploying from the VMware VirtualCenter, specify the host to deploy the VSP from the Host/Cluster page.

8. On the **Disk Format** page, select **Thin Provision**, and then click **Next**.
9. On the **Network Mapping** page, map the virtual machine to the networks in your inventory, and then click **Next**.
10. On the **Ready to Complete** page, do the following steps:
 - a. Review the deployment settings.
 - b. Select the **Power on after Deployment** checkbox. Selecting this option powers on the VSP after the installation is complete.
 - c. Click **Finish**.

A `Deployment Completed Successfully` message should appear after a few minutes.

11. Click **Close**.
12. On the left navigation pane, verify the system is on and the green icon is displaying on the new VSP. If necessary, expanding navigation tree to find the deployed VSP.
 - a. Right-click the VSP in the virtual machine list.
 - b. Select **Open Console**.

The VSP is now ready to set up. Continue on to [“Establishing the Virtual Service Processor IP Address”](#) (page 65).

Establishing the Virtual Service Processor IP Address

After verifying the connection to the Virtual Service Processor, you must perform one of the following options:

- **Option A:** Determine the temporary IP Address of the VSP in a DHCP environment.
- **Option B:** Set the IP address of the VSP in a non-DHCP environment.

Option A: DHCP Network Environment

To determine a temporary IP address for the VSP:

1. In the VMware vSphere Client window, select the **Summary** tab and wait 5-10 minutes for the IP address to appear (in the General section, **IP address** field).
2. Make a note of this VSP IP address, and launch HP 3PAR SmartStart.

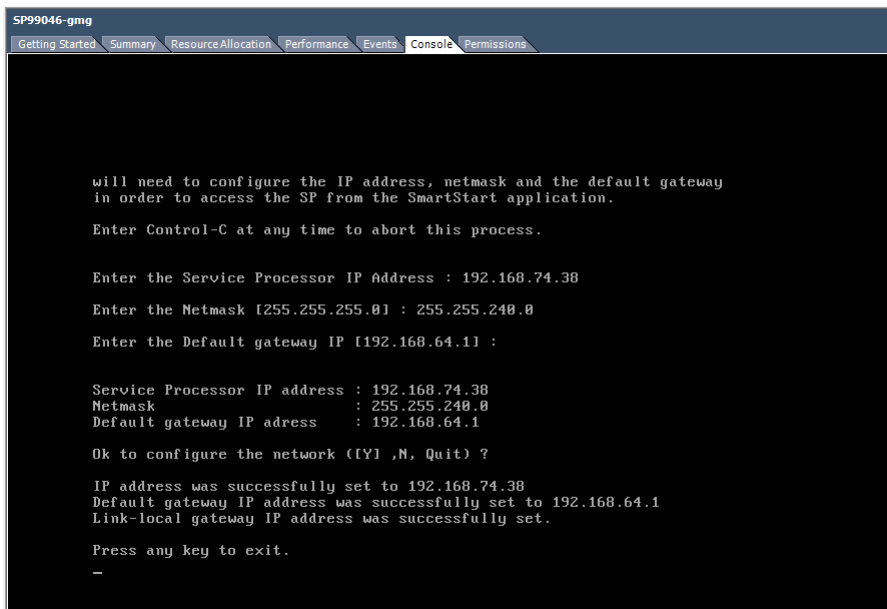
3. Continue on to [“Setting Up the Service Processor and Storage System” \(page 70\)](#) to set up the VSP with SmartStart over the public network. If you are not using SmartStart, see [“Installing HP 3PAR Storage Software When HP 3PAR SmartStart is Unavailable” \(page 113\)](#) to manually launch the setup wizards.

Option B: Non-DHCP Environment

To set the IP address of the VSP:

1. In the VMware vSphere Client window, select the **Console** tab, click anywhere on the screen, and press **Enter**.
2. Log on as **setupusr**. Press **Enter**.
A password is not required to configure the network settings.
3. Enter the service processor IP address and press **Enter**.
4. Enter the Netmask address and press **Enter**.
5. Enter the default gateway address and press **Enter**.
6. Enter **Y** to configure the network and press **Enter**.
7. Review the configuration confirmation and record the VSP IP address for reference during subsequent setup procedures with HP 3PAR SmartStart or the SP Setup Wizard.

Figure 44 Network Setup Confirmation



```
SP99046-gmg
Getting Started Summary Resource Allocation Performance Events Console Permissions

will need to configure the IP address, netmask and the default gateway
in order to access the SP from the SmartStart application.

Enter Control-C at any time to abort this process.

Enter the Service Processor IP Address : 192.168.74.38
Enter the Netmask [255.255.255.0] : 255.255.240.0
Enter the Default gateway IP [192.168.64.1] :

Service Processor IP address : 192.168.74.38
Netmask : 255.255.240.0
Default gateway IP address : 192.168.64.1

Ok to configure the network (Y,N,Quit) ?

IP address was successfully set to 192.168.74.38
Default gateway IP address was successfully set to 192.168.64.1
Link-local gateway IP address was successfully set.

Press any key to exit.
_
```

8. Press **Enter** to exit.
9. Press **Ctrl-Alt** to release the cursor.
10. Continue on to [“Setting Up the Service Processor and Storage System” \(page 70\)](#) to set up the VSP with SmartStart over the public network. If you are not using SmartStart, see [“Installing HP 3PAR Storage Software When HP 3PAR SmartStart is Unavailable” \(page 113\)](#).

NOTE: This network configuration is temporary. If the VSP is rebooted, you will need to repeat this procedure before continuing to the Service Processor configuration.

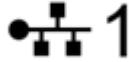
Connecting to a Physical Service Processor

Use the following instructions to connect to a physical service processor installed in the rack. Do not continue with the section if you are using a VSP.

Configuring the Physical Service Processor IP Address

The following example uses Microsoft Windows 7™ to configure the SP IP address and the procedures may vary depending on the type of OS being used.

1. At the rear of the storage system, connect one end of the network cable to the lowest numbered Ethernet port on the SP. Ethernet port silk-screening may vary with the server, but port 1 is typically represented by the following:



2. Connect the other end of the cable to the Ethernet port on the laptop.
3. Configure LAN settings on the laptop:

NOTE: The configuration procedures may vary depending on the version of Microsoft Windows, Apple Mac, or Linux OS in use.

- a. Select **Control Panel > Network and Internet > Network and Sharing Center**, and click **Change adapter settings**.
 - b. Right-click the connection name for the port, and select **Properties**.
 - c. In the **Properties** dialog box, on the **Networking** tab, double-click **Internet Protocol Version 4 (TCP/IPv4)** in the list.
 - d. In the **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box, make note of your current settings.
 - e. Select **Use the following IP address**, and enter the following:
 - IP address: 192.168.0.2
 - Subnet mask: 255.255.255.0
 - Default gateway: 192.168.0.1
 - f. Click **OK** and **Close** to confirm and activate your changes.
4. In a browser window, enter <https://192.168.0.100/sp/SetIpAddress.html>.
 5. Log in with the user ID `setupusr`. Leave the password box blank.

The Service Processor IP Setup wizard is displayed.

NOTE: The Service Processor Setup Wizard may not display correctly when using Microsoft Internet Explorer 10 with default security settings. If the wizard continues to display incorrectly, try refreshing the browser page.

6. In the **Assign IP Address** pane, enter the SP IP address to be used on the customer LAN.

Figure 45 Assign IP Address

Service Processor IP Setup

Steps

1. **Assign IP Address**
2. Summary
3. Apply Settings
4. Finish

Assign IP Address

Enter the IP address settings for your Service Processor.

Enter the IPv4 address you want to assign to this Service Processor.

IP Address: *

Subnet Mask: *

Gateway: *

< Prev Next > Finish Cancel

While you are entering an IP address, the **IP Address** field indicates an error. After you have entered a valid IP address, the **Subnet Mask** and **Gateway** fields are automatically populated.

Figure 46 Subnet Mask and Gateway Fields Populated

Service Processor IP Setup

Steps

1. **Assign IP Address**
2. Summary
3. Apply Settings
4. Finish

Assign IP Address

Enter the IP address settings for your Service Processor.

Enter the IPv4 address you want to assign to this Service Processor.

IP Address: *

Subnet Mask: *

Gateway: *

< Prev Next > Finish Cancel

You can customize settings for the **Subnet Mask** and **Gateway** if required.

7. Select **Next**, review the **Summary** screen, and then select **Next** when you are ready. The settings are applied.

NOTE: You may see a dialogue box indicating the laptop is unable to connect to the SP. This dialog box remains displayed until the adapter settings have been changed in the SP and verified. No action is necessary; the dialogue box closes within three minutes.

8. Select **Finish** when completed.
9. Repeat [Step 3](#) and re-configure the original LAN settings on the laptop.
10. Disconnect the network cable from the laptop, and connect the SP to the customer LAN.

11. Continue on to [“Setting Up the Service Processor and Storage System” \(page 70\)](#) and set up the SP with SmartStart over the public network.
If you are not using SmartStart, see [“Installing HP 3PAR Storage Software When HP 3PAR SmartStart is Unavailable” \(page 113\)](#).

10 Setting Up the Service Processor and Storage System

Before you begin setting up the storage system, review and complete the following tasks:

- Complete the storage system installation checklists below.
- Verify Microsoft Windows 2008 R2 or 2012 is currently running. Windows 2008 R2 or 2012 is required to perform host configurations. If the system does not meet the requirements, you can proceed with the software installation without using HP 3PAR SmartStart.

Storage System Software Installation Checklist

Verify the following before you begin the installation process:

- All components are installed.
- Review the storage system setup and make sure it is powered on.
- All LEDs are properly functioning.
- The SP is installed, powered on, and assigned an IP address; or the VSP is installed and connected, and the temporary IP address is determined.
- The SP connection is established.

Table 13 SP and Storage System Software Installation Checklist

HP 3PAR Service Processor	
StoreServ serial number NOTE: The StoreServ 7-digit serial number is located on the back of your HP 3PAR storage system next to the power switch for the node enclosure PCM, and it begins with 16 (for example, 1624635).	
Service Processor Host Name NOTE: During the SP Setup process, the StoreServ must be powered on, connected to the same network subnet as the SP, and non-initialized to allow the SP to verify the StoreServ serial number.	
Permanent IP address (IPv4 only)	
Subnet mask	
Gateway IP address	
DNS settings: Domain name DNS servers	
Maximum supported speed and duplex setting: Autonegotiate or Custom duplex (half or full) and Custom speed (10, 100, or 1000 MB/s)	
Proxy server settings for Remote Support (if applicable): Protocol Address and port Authentication information (optional)	
System Support Information: • Installation site information • Customer information	

Table 13 SP and Storage System Software Installation Checklist *(continued)*

Date and time: Enter manually Use NTP server information Time Zone	
New password to assign setupusr (for use with the system setup wizards) NOTE: All passwords for the setupusr username must be between 7 and 32 characters in length and can consist of alphanumeric characters and the following special characters: period (.), plus (+), dash (-), equal (=), and forward slash (/).	
New password to assign 3parcust to access Service Processor Onsite Customer Care (SPOCC) NOTE: All passwords for the 3parcust username must be between 7 and 32 characters in length and can consist of alphanumeric characters and the following special characters: period (.), plus (+), dash (-), equal (=), and forward slash (/).	
HP 3PAR Storage System	
StoreServ serial number NOTE: The serial number is located on the back of your HP 3PAR storage system next to the power switch for the node enclosure PCM, and it begins with 16 (for example, 1624635).	
StoreServ system name	
IP address (IPv4 only)	
Subnet mask	
Gateway IP address	
Date and time: Use one of the following methods to configure the date and time: • Copy from SP • Enter manually or use NTP server information • Time Zone	
New password to assign 3paradm (to access the storage system) NOTE: Passwords for the 3paradm username can include all printable characters and be between 6-8 characters in length.	
HP 3PAR SmartStart	
Performing host configurations after using SmartStart for installation setup requires an available server to run Microsoft Windows 2008 R2, x64 Edition or 2012.	

SmartStart Prerequisites

- Microsoft Windows 2008 R2 Server x64 Edition or 2012 is currently running in the system
- 1.0 gigahertz or higher processor
- 1 GB of installed RAM (2 GB recommended)
- CD-ROM or DVD-ROM drive
- 1280 x 1024 or better screen resolution

SmartStart Online Help is supported in the following browser versions:

- Microsoft Internet Explorer 8, 9 and 10
- Mozilla Firefox 14 through 21

After completing the checklist, continue on to [“Launching HP 3PAR SmartStart” \(page 72\)](#).

Launching HP 3PAR SmartStart

Two separate SmartStart setup wizards assist with the set up of the storage system:

- HP 3PAR Service Processor Setup Wizard
- HP 3PAR Storage System Setup Wizard

The setup is sequential and involves the following processes:

- Customizing the communication settings of the SP with the HP 3PAR Service Processor Setup Wizard
- Setting up the storage system with the HP 3PAR Storage System Setup Wizard

You only need to set up the SP and StoreServ system only once for each new storage system.

Before inserting the HP 3PAR SmartStart CD, the following system requirements must be met.

NOTE: If you cannot locate your CD, call your HP Sales Representative at 1-800-334-5144.

To launch HP 3PAR SmartStart:

1. Insert the HP 3PAR SmartStart CD.
2. Follow the onscreen instructions to launch the application. If the auto-run menu does not appear, navigate to DVD drive, and double-click the `smartstart.exe` file.

NOTE: The SmartStart application may take up to 3 minutes to launch.

Continue on to [“Launching the HP 3PAR Service Processor Setup Wizard” \(page 72\)](#) and launch the setup wizard.

If HP 3PAR SmartStart is unavailable, see [“Launching the SP Setup Wizard” \(page 113\)](#) and learn how to manually launch the setup wizards.

NOTE: For additional information and help, use the HP 3PAR SmartStart online help (accessible by pressing **F1**).

Launching the HP 3PAR Service Processor Setup Wizard

The setup wizard proceeds through the following steps:

- Welcome
- Generate SP ID
- Networking
- Remote Support
- System Support Information

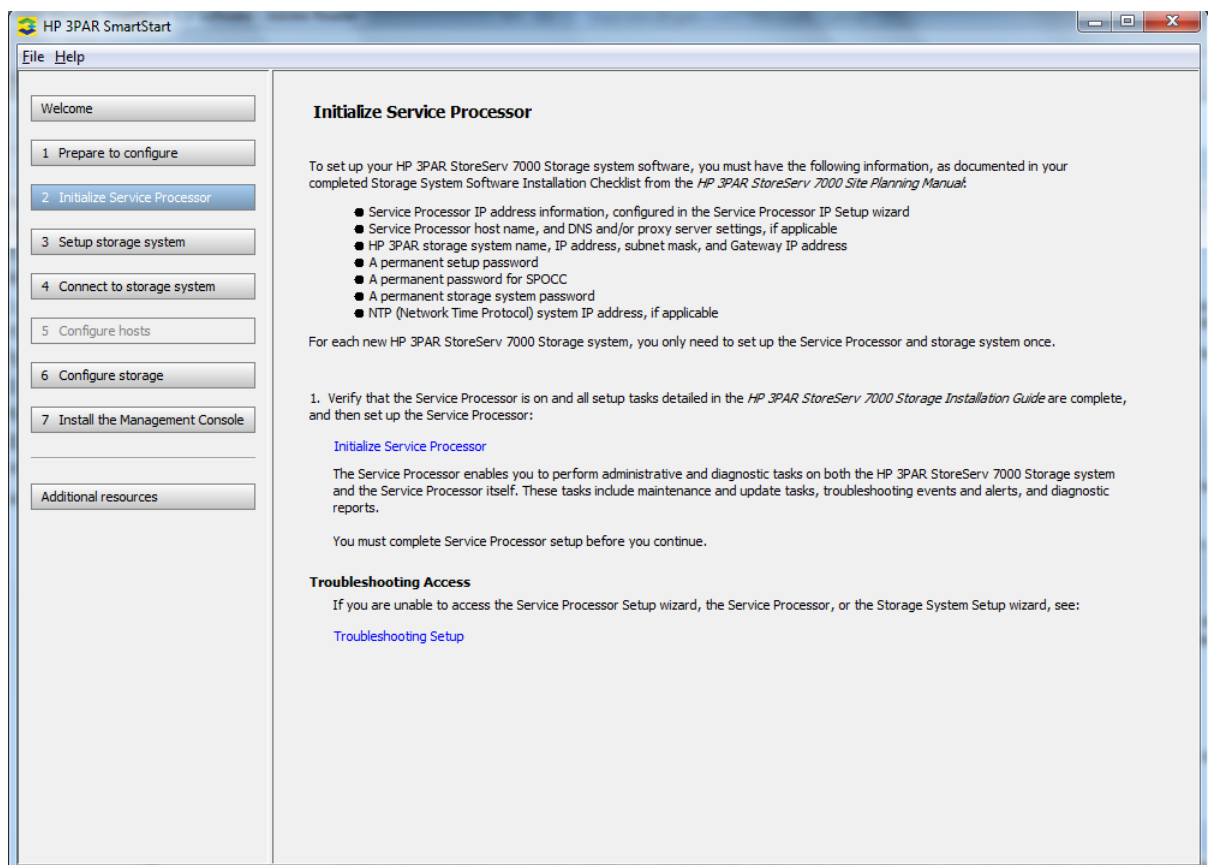
- Time and Region
- Change Passwords
- Summary
- Applying Settings
- Finish

To launch the wizards in SmartStart:

1. Verify the service processor is powered on.
2. Click the **Initialize Service Processor** link in SmartStart wizard step 2, **Initialize Service Processor**.
3. Enter the SP IP address and click **OK**.

NOTE: When configuring in a DHCP network environment, enter the VSP temporary IP address.

Figure 47 Initialize Service Processor Page



NOTE: A security certificate error may occur when there is a problem with a web server's use of the certificate and a blocking page will appear. You can ignore the warning and continue to go to the website.

4. On the browser window, enter **setupusr** in the **User Name** box, and leave the password box blank.
5. Click **OK**.

NOTE: The Service Processor Setup Wizard may not display correctly when using Microsoft Internet Explorer 10 with default security settings. If the wizard continues to display incorrectly, try refreshing the browser page.

Welcome Page

The **Welcome** page shows the information that is required to complete the wizard and set up the SP. Follow the instructions on each screen, and then click **Next**.

The setup takes about 15 minutes.

You must have the following information:

- StoreServ 7-digit serial number
- SP network configuration:
 - The name to be assigned to the Service Processor
 - IP address (IPv4 only)
 - Subnet mask and gateway, if you are using custom settings
 - DNS settings, if you plan to enable the Domain Name System
- Remote support:
 - Proxy server settings (optional)
- Time and region:
 - The current date and time or NTP server addresses, if you plan to use automatic date/time configuration
 - Time zone region (for example, America/Los Angeles)

Figure 48 Welcome Page

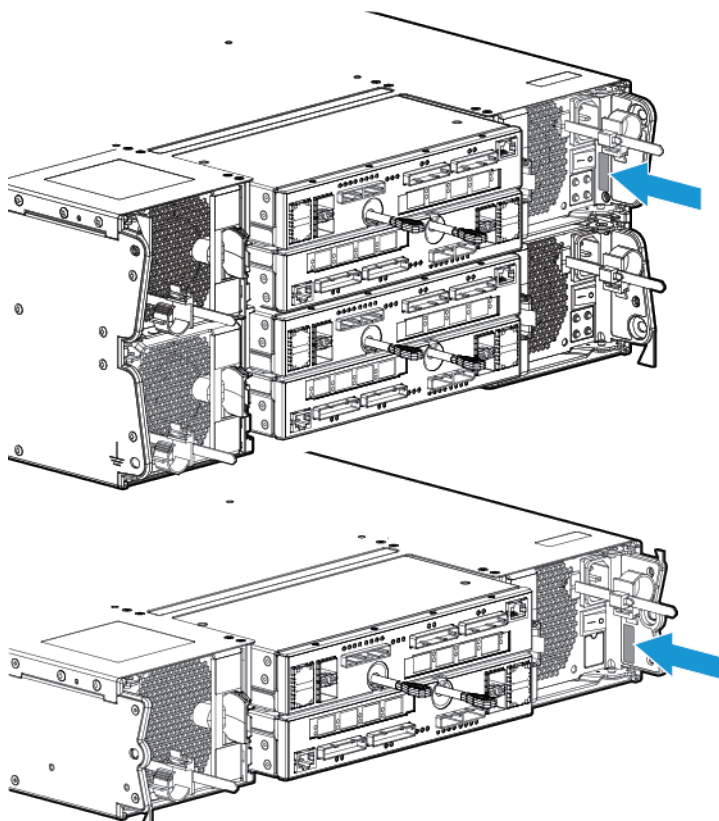
The screenshot shows the 'HP 3PAR Service Processor Setup Wizard' window. On the left is a 'Steps' sidebar with a list of 10 steps: 1. Welcome, 2. Generate SP ID, 3. Networking, 4. Remote Support, 5. System Support Information, 6. Time and Region, 7. Change Passwords, 8. Summary, 9. Apply Settings, and 10. Finish. Step 1 is highlighted. The main area is titled 'Welcome' and contains the following text: 'This wizard helps you perform a new setup of your HP 3PAR Service Processor (SP). The setup process will take about 15 minutes. Here is the information that you will need to continue:'. Below this, there are sections for 'Generate SP ID' (listing 'StoreServ Serial Number'), 'SP network configuration' (listing 'The name to assign to the Service Processor', 'IP address (IPv4 only)', 'Subnet mask and gateway', and 'DNS settings (optional)'), 'Remote Support' (listing 'Proxy server settings (optional)'), 'System Support Information' (listing 'Technical contact', 'Company name, contact information', 'Alert recipient information', 'Installation site mailing address', and 'Support type (HP direct or partner)'), and 'Time and region' (listing 'The current date and time or Network Time Protocol (NTP) server addresses' and 'Time zone region (for example, America/Los Angeles)'). A note states: 'If replacing an existing Service Processor (SP) you will need the following' followed by 'Previous SP ID', 'StoreServ IP address', and 'StoreServ Credentials'. At the bottom, it says: 'For more information, see your completed Storage System Software Installation Checklist from the HP 3PAR StoreServ 7000 Site Planning Manual.' A 'Caution' box at the bottom states: 'Do not use your browser's navigation buttons (Back, Forward, Refresh) during the setup process. Using these buttons will cause you to lose all progress, and you will need to re-enter all your settings. To navigate the setup wizard, use the Prev and Next buttons.' At the bottom right of the window are four buttons: '< Prev', 'Next >', 'Finish', and 'Cancel'.

Generate Service Processor ID

This page simplifies the process of creating the SP ID.

1. Enter the StoreServ serial number.

Figure 49 Serial Number Label Locations for a 4-node system and a 2-node system



NOTE: The StoreServ 7-digit serial number is located on the back of your HP 3PAR storage system next to the power switch for the node enclosure PCM, and it begins with **16** (for example, 1624635).

The StoreServ 7-digit serial number can also be found in the product documentation provided with your system.

2. Click **Generate SP ID**.

Figure 50 Generating SP ID Page

The screenshot shows the 'HP 3PAR Service Processor Setup Wizard' window. On the left, a 'Steps' list includes: 1. Welcome, 2. **Generate SP ID**, 3. Networking, 4. Remote Support, 5. System Support Information, 6. Time and Region, 7. Change Passwords, 8. Summary, 9. Apply Settings, and 10. Finish. The main area is titled 'Generate Service Processor(SP)ID' and contains the instruction: 'Enter Your System's StoreServ Serial Number and click 'Generate SP ID' to create SP ID.' Below this, there is a text field for 'StoreServ Serial Number*' containing '1699753' with a clear 'x' button and a help icon. A checkbox labeled 'Replacing a previous Service Processor (SP)' is present. Below the checkbox are four text fields: 'Previous SP ID: *', 'StoreServ IP Address: *', 'Login: *', and 'Password: *'. At the bottom left of the main area is a 'Generate SP ID' button, and to its right is a label 'Service Process ID:'. At the bottom right of the window are four buttons: '< Prev', 'Next >', 'Finish', and 'Cancel'.

NOTE: During the SP Setup process, the StoreServ must be powered on, connected to the same network subnet as the SP, and non-initialized to allow the SP to verify the StoreServ serial number.

3. After the SP ID is generated, click **Next**.

Configure SP Networking

To complete this section, use the completed installation checklist from *HP 3PAR StoreServ 7000 Site Planning Manual* as reference.

NOTE: For additional information and help, use the HP 3PAR SmartStart online help (accessible by pressing **F1**).

1. Enter the SP information for the following fields:
 - Service Processor hostname
 - IP Address
 - Subnet Mask
 - Gateway

2. If applicable, check the Enable DNS Support box and provide the values for the following fields:
 - Domain Name
 - DNS Server(s)

To adjust the network speed, expand the **Advanced** option to change the settings.

If you are setting up a VSP in DHCP network environment, enter the permanent IPv4 address you want to assign to it.

CAUTION: Be sure to enter the permanent SP IP address. If you continue to use the temporary SP IP address, you may prevent additional system setups from being completed successfully.

If you are setting up a physical Service Processor, the IP address field displays the permanent IP address previously assigned in the Service Processor IP Setup wizard.

3. Click **Next**.

Figure 51 Configuring Service Processor Networking Page

The screenshot shows the 'HP 3PAR Service Processor Setup Wizard' window. The 'Steps' pane on the left lists 10 steps, with '3. Networking' highlighted. The main pane is titled 'Configure Service Processor Networking'. It displays the 'Service Processor ID' as SP0001699753 and 'StoreServ Serial No.' as 1699753. Below this, it prompts to 'Enter the hostname you want to assign to this Service Processor.' with a text field containing 'SP0001699753'. Next, it prompts to 'Enter the network settings for your Service Processor.' and includes a verification note: 'Verify that the IP address information displayed is the permanent IPv4 address you want to assign to this Service Processor. If necessary, enter the permanent IP address information.' The network settings fields are: 'IP Address: *' (192.168.74.49), 'Subnet Mask: *' (255.255.192.0), and 'Gateway: *' (192.168.64.1). There is a checkbox for 'Enable DNS Support' which is checked. Below it are fields for 'Domain Name: 3pardata.com' and 'DNS Server(s): 192.168.1.5' with a note '(Separate multiple values with a comma)'. An 'Advanced' section is expanded, showing 'Enter your network's maximum supported speed or select Auto to enable autonegotiation.' with 'Network Speed' set to '1000 Mb/s' and 'Duplex' set to 'Full'. At the bottom right are buttons for '< Prev', 'Next >', 'Finish', and 'Cancel'.

Remote Support

Remote Support enables HP to provide you with the best possible support for your storage system, including the following:

- Timely remote service
- Remote online software updates
- Accelerated troubleshooting and issue resolution

Remote Support sends diagnostic information, such as system health statistics, configuration data, performance data, and system events, to HP 3PAR Central. These diagnostics are required for HP to perform fault detection and analysis on your HP 3PAR StoreServ Storage system that help maximize your storage availability.

All remote communications are encrypted and transferred securely to HP 3PAR Central, and no customer application data is ever transferred. No other business information is collected, and the data is managed according to the HP Data Privacy policy. For more information, visit <http://www8.hp.com/us/en/privacy/privacy.html>.

Requirements for Setting Firewalls and Ports

Meeting firewall and port requirements are necessary when configuring inbound and outbound connections on HP 3PAR arrays. An *inbound* connection enables remote access to SP and StoreServ for authorized HP 3PAR support personnel. An *outbound* connection enables diagnostic data transfer such as alerts, StoreServ, SP log files, and configuration files for remote diagnosis.

Secure Network Mode is a mode used for communication between the SP and HP 3PAR Connection portal for diagnostic data transfer (*Outbound*) and Remote Access (*Inbound*).

NOTE: Connectivity to only one of the Global Access Servers is required for remote support.

Table 14 Firewall and Port Requirements

Network Requirement	Secure Network Mode
3PAR support portal IP address	Your DNS server should allow remote3par.houston.hp.com to be resolved to 15.201.225.95
Outbound connectivity (Secure Service Collector Server)	Port 443 (https) to be opened (outbound) between service processor IP and the following IP address: - remote3par.houston.hp.com 15.201.225.95 (primary IP address) - remote3par.houston.hp.com 15.240.56.190 (secondary IP address)
Inbound connectivity (Global Access Server)	Port 443 (https) to be opened (outbound) between Service Processor IP and the following IP addresses: 15.201.200.205 g4t2481g.houston.hp.com 15.201.200.206 g4t2482g.houston.hp.com 15.240.0.73 g9t1615g.houston.hp.com 15.240.0.74 g9t1616g.houston.hp.com

NOTE: If the StoreServ Storage system or the SP are placed on different IP networks and an IP firewall exists between them, the following ports must be opened for communication between the StoreServ Storage system and the SP:

- **Port 22 (SSH)**—Used for depositing and executing programmatically driven service scripts and for collecting an archive of diagnostic data (known as an InSplore).
- **Port 5781 (Event Monitor)**—Used for monitoring system events on the StoreServ Storage system.
- **Port 5782 (CLI)**—Used for gathering system health information, configuration data, and performance data.

To enable a proxy server for remote support:

1. Enter proxy server settings, if applicable.
2. If applicable, check the Enable authentication box to enable the setting. Enter the required credentials.

3. To mask identifying information in all Service Processor log files, select the **Make contents of Service Processor log files anonymous** box in the **Advanced** pane.
When you make the log files anonymous, the Remote Support process replaces object names in log files (such as TopSecretVirtualVolume) with meaningless sequential labels (such as VVnnn).
4. Click **Next** to continue the SP configuration. This wizard enables Remote Support upon completion.

Figure 52 Remote Support Page

The screenshot shows the 'HP 3PAR Service Processor Setup Wizard' window. On the left, a 'Steps' pane lists 10 steps, with '4. Remote Support' highlighted. The main area is titled 'Configure Remote Support'. It contains text explaining that Remote Support enables HP to provide proactive support, including timely remote service, online software updates, and accelerated troubleshooting. It also states that diagnostic information is sent securely to HP 3PAR Central. Below this text is a section for enabling a proxy server, with fields for Protocol (http), Address, and Port. There is also a section for enabling authentication, with fields for Login ID, Password, and Re-enter Password. At the bottom, there is an 'Advanced' section that is currently collapsed. Navigation buttons at the bottom right include '< Prev', 'Next >', 'Finish', and 'Cancel'.

HP 3PAR Service Processor Setup Wizard

Steps

1. Welcome
2. Generate SP ID
3. Networking
- 4. Remote Support**
5. System Support Information
6. Time and Region
7. Change Passwords
8. Summary
9. Apply Settings
10. Finish

Configure Remote Support

Remote Support enables HP to proactively provide you the best possible support for your HP 3PAR StoreServ Storage system, including:

- Timely remote service
- Remote online software updates
- Accelerated troubleshooting and issue resolution

Remote Support securely sends diagnostic information such as system health statistics, configuration data, performance data, and system events to HP 3PAR Central. These diagnostics are required for HP to perform fault detection and analysis on your HP 3PAR StoreServ Storage system that help maximize your storage availability.

All remote communications are encrypted and transferred securely to HP 3PAR Central, and no customer application data is ever transferred. No other business information is collected, and the data is managed according to HP's Data Privacy policy. For more information, see: <http://www8.hp.com/us/en/privacy/privacy.html>

Click **Next** to continue the Service Processor configuration. This wizard will enable Remote Support upon completion.

Note: You can complete Service Processor setup even if the Service Processor is not currently connected to the network. You must set up your network to configure Remote Support. For more information, see the *HP 3PAR StoreServ 7000 Storage Installation Guide*.

☐ Enable proxy server for Remote Support

Protocol: Address: Port:

☐ Enable authentication

Login ID:
Password:
Re-enter Password:

Advanced

< Prev Next > Finish Cancel

System Support Information

To receive remote technical support:

1. Enter the **Installation Site Information**:
 - Street
 - City
 - Postal Code
 - State/Province
 - Country
2. Enter the Customer Information:
 - Company Name
 - Technical contact first name

- Technical contact last name
- Phone number
- Fax number
- Email address for service alert notification

3. Click **Next**.

Figure 53 System Support Information Page

HP 3PAR Service Processor Setup Wizard

Steps

1. Welcome
2. Generate SP ID
3. Networking
4. Remote Support
- 5. System Support Information**
6. Time and Region
7. Change Passwords
8. Summary
9. Apply Settings
10. Finish

System Support Information

The following information must be provided to receive remote support for your storage system.

Installation Site Information

Mailing address

Street: *

City: *

Postal code: *

State/Province: * (required for United States & Canada)

Country: * United States of America

Customer information

Company Name: *

Technical contact first name: *

Technical contact last name: *

Phone number: *

FAX number: *

E-mail address for service alert notification: *

Support from: * HP direct

< Prev Next > Finish Cancel

Time and Region

On the **Time and Region** page, the **Manual** option is selected and automatically populated with the current host Web browser time by default. If you select **Automatic**, complete the **NTP Server(s)** field and click **Test** to get the specified NTP time.

To configure the time zone, in the lists, select your continental region (Africa, America, Antarctica, Arctic, Asia, Atlantic, Australia, Europe, Indian, and Pacific) and the city or country closest to you. Click **Next**.

Figure 54 Time and Region Page

Change Passwords

NOTE: All passwords for the **setupusr** and **3parcust** usernames must be between 7 and 32 characters in length and consist of alphanumeric characters and the following special characters: period (.), plus (+), dash (-), equal (=), and forward slash (/).

- Enter a new, secure password for the username **setupusr**.
You will use this username and password to access the Storage System Setup wizard and set up your storage system.
- Enter a new, secure password for the username for SPOCC (**3parcust**).
- Record the password and store away in a safe location. Click **Next**.

For more information on assigning these passwords, see your completed Storage System Software Installation checklist.

NOTE: To reset a password for the SP, log into SPOCC. If you lose all your SP passwords and are unable to log into SPOCC, you must re-image the SP.

Figure 55 Change Passwords Page

HP 3PAR Service Processor Setup Wizard

Steps

1. Welcome

2. Generate SP ID

3. Networking

4. Remote Support

5. System Support Information

6. Time and Region

7. Change Passwords

8. Summary

9. Apply Settings

10. Finish

Change Passwords

Enter a new password for the following usernames:
setupusr is used to log into the Storage System Setup Wizard.
3parcust is used to log into Service Processor Onsite Customer Care (SPOCC).

Note: Password must be between 7 to 32 characters long, consisting of alphanumeric characters. Allowed special characters are ., /, +, - and =.

Username: setupusr

Password:

Re-enter Password:

Username: 3parcust

Password:

Re-enter Password:

Note:

To modify these passwords and to create new usernames, log into SPOCC. To access SPOCC, enter the network address of the Service Processor in a web browser.

< Prev

Next >

Finish

Cancel

82 Setting Up the Service Processor and Storage System

Summary

The **Summary** page shows all the selected options and this page cannot be modified. To modify the selected options, click **Prev**. To proceed, click **Next**.

Figure 56 Summary Page

The screenshot shows the 'HP 3PAR Service Processor Setup Wizard' window. On the left, a 'Steps' list includes: 1. Welcome, 2. Generate SP ID, 3. Networking, 4. Remote Support, 5. System Support Information, 6. Time and Region, 7. Change Passwords, 8. Summary (highlighted), 9. Apply Settings, and 10. Finish. The main area is titled 'Summary' and contains a message: 'Click **Next** to apply these settings to your Service Processor.' Below this, settings are organized into four sections: 'SP Networking' (Service Processor ID: SP0001400471, Desired SP Hostname: SP0001400471, IP Address: 192.168.73.226, Subnet Mask: 255.255.240.0, Gateway: 192.168.64.1, DNS Settings: Disabled, Advanced Network Speed: Auto, Duplex: Auto), 'Remote Support' (Proxy Server: Disabled, Advanced Make contents of SP log files anonymous: No), 'Time and Region' (Mode: Manual, Date: Wed Jun 05 2013, Time: 11:39, Time Zone: America/Los_Angeles), and 'System Support Information' (Company name: Stark Industries, Technical Contact First Name: Tony, Technical Contact Last Name: Stark, Phone Number: 555-1212, Fax Number: , E-mail address: tony.stark@starkindustries.com, Installation Site: Street: 10880 Malibu Point, City: Malibu, State/Province: CA, Postal Code: 90263, Country: US, Support by HP Direct: Y). At the bottom right, there are four buttons: '< Prev', 'Next >' (highlighted in blue), 'Finish', and 'Cancel'.

Applying Settings

The **Apply Settings** page shows the setup process and operation status. The arrows indicate the operation is in progress, and the check marks indicate the operation is complete.

Click **OK** to finish setting up the Service Processor.

Figure 57 Apply Settings

HP 3PAR Service Processor Setup Wizard

Steps

1. Welcome

2. Generate SP ID

3. Networking

4. Remote Support

5. System Support Information

6. Time and Region

7. Change Passwords

8. Summary

9. Apply Settings

10. Finish

Apply Settings

The Status column displays the progress of your Service Processor setup.

Setup Progress

Operation	Status
Save System Support Information	✓
Set Service Processor ID	✓
Change passwords	✓
Configure IP address (SP will reboot)	✓
Configure DNS support	✓
Set date and time	✓
Configure and verify Remote Support connectivity	✓
Finish setup	✓
Restart Service Processor	🔄

Restart Service Processor

< Prev

Next >

Finish

Cancel

Finish

The **Finish** page describes the status of the SP setup. Click **Finish**.

Figure 58 SP Setup Finish Page

HP 3PAR Service Processor Setup Wizard

Steps

1. Welcome

2. Generate SP ID

3. Networking

4. Remote Support

5. System Support Information

6. Time and Region

7. Change Passwords

8. Summary

9. Apply Settings

10. Finish

Finish

Congratulations, you have successfully set up your Service Processor!

Click **Finish** to exit this wizard and resume setup with SmartStart.

< Prev

Next >

Finish

Cancel

The HP 3PAR Service Processor is setup is now complete. Continue on to “[Launching the HP 3PAR Storage System Setup Wizard](#)” (page 85).

Launching the HP 3PAR Storage System Setup Wizard

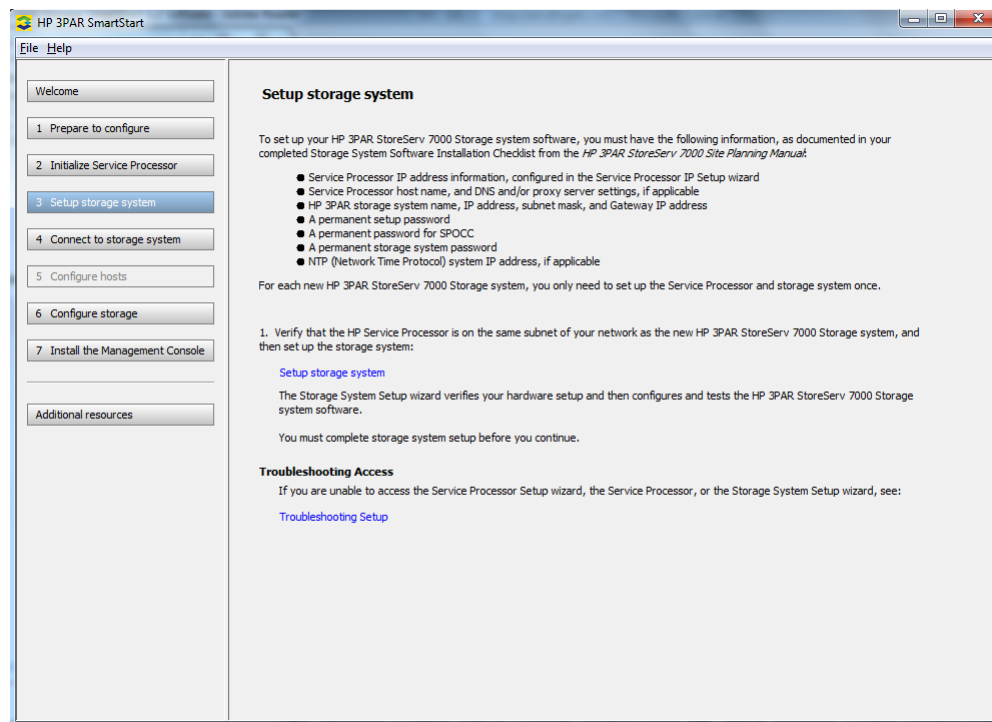
The setup wizard proceeds through the following steps:

- Welcome
- Enter Storage System
- Verify Storage System
- Configure Networking
- Configure Time
- Change Password
- Verify Configuration
- Progress
- Results

To launch the storage system setup wizard in SmartStart:

1. Click the **Setup storage system** link in SmartStart wizard step 3, **Setup storage system**.

Figure 59 Setup Storage System



2. Enter the SP IP address. Click **Ok**.

NOTE: When configuring in a DHCP network environment, enter the VSP temporary IP address.

NOTE: The Storage System Setup Wizard may not display correctly when using Microsoft Internet Explorer 10 with default security settings. If the wizard continues to display incorrectly, try refreshing the browser page.

Welcome

The Welcome page shows the information that is required to complete the wizard and set up the SP. Follow the instructions on each page, and then click **Next**.

You must have the following information before you proceed:

- The 7-digit HP 3PAR storage system serial number
- Storage system name
- Storage system networking information:
 - IP address (IPv4 only)
 - Subnet mask and gateway
- Time zone information:
 - Date and time or Network Time Protocol (NTP) server address if using automatic date/time configuration
 - Time zone region

Figure 60 Storage Setup Welcome Page

The screenshot shows the 'HP 3PAR Storage System Setup Wizard' window. It has a title bar and a main content area. On the left, there is a 'Steps' pane with a list of steps: 1. Welcome, 2. Enter Serial Number, 3. Verify Storage System, 4. Configure Networking, 5. Configure Time, 6. Change Password, 7. Verify Configuration, 8. Progress, and 9. Results. Step 1 is highlighted. The main content area is titled 'Welcome to the HP 3PAR Storage System Setup Wizard!'. It contains the following text: 'This wizard helps you perform a new setup of your HP 3PAR storage system. The setup process will take approximately 20 minutes to 2 hours, depending on the configuration.' followed by 'To continue, you must have the following information:'. Below this is a bulleted list: '• The 7-digit HP 3PAR storage system serial number. (For more information on locating this serial number, see your *Installation Guide*.)', '• The name to assign to the storage system', '• Storage system networking information: (IP address (IPv4 only), Subnet mask and gateway)', and '• Time zone information information: (The current date and time or Network Time Protocol (NTP) server addresses, if you plan to use automatic date/time configuration, Time zone region (for example, America/Los Angeles))'. Below the list is a note: 'For more information, see your completed Storage System Software Installation Checklist from the HP 3PAR StoreServ 7000 Site Planning Manual.' and a 'Note' box: 'Note: During the initial storage system setup process, the Service Processor must be on the same subnet of the network as the storage system that you are configuring.' and a 'Caution' box: 'Caution: Do not use your browser's navigation buttons (Back, Forward, Refresh) during the setup process. Using these buttons will cause you to lose all progress, and you will need to re-enter all your settings. To navigate the setup wizard, use the Prev and Next buttons.' At the bottom right, there are four buttons: '< Prev', 'Next >', 'Finish', and 'Cancel'.

Steps	Welcome to the HP 3PAR Storage System Setup Wizard!
1. Welcome 2. Enter Serial Number 3. Verify Storage System 4. Configure Networking 5. Configure Time 6. Change Password 7. Verify Configuration 8. Progress 9. Results	This wizard helps you perform a new setup of your HP 3PAR storage system. The setup process will take approximately 20 minutes to 2 hours, depending on the configuration. To continue, you must have the following information: • The 7-digit HP 3PAR storage system serial number. ◦ For more information on locating this serial number, see your <i>Installation Guide</i>. • The name to assign to the storage system • Storage system networking information: ◦ IP address (IPv4 only) ◦ Subnet mask and gateway • Time zone information information: ◦ The current date and time or Network Time Protocol (NTP) server addresses, if you plan to use automatic date/time configuration ◦ Time zone region (for example, America/Los Angeles) For more information, see your completed Storage System Software Installation Checklist from the HP 3PAR StoreServ 7000 Site Planning Manual. Note: During the initial storage system setup process, the Service Processor must be on the same subnet of the network as the storage system that you are configuring. Caution: Do not use your browser's navigation buttons (Back, Forward, Refresh) during the setup process. Using these buttons will cause you to lose all progress, and you will need to re-enter all your settings. To navigate the setup wizard, use the Prev and Next buttons.

< Prev Next > Finish Cancel

Enter Serial Number

On the **Enter Serial Number** page, the serial number is populated. If not, enter the storage system serial number.

Figure 61 Enter Serial Number Page

The screenshot shows the 'HP 3PAR Storage System Setup Wizard' window. The title bar reads 'HP 3PAR Storage System Setup Wizard'. The window is divided into two main sections. On the left, under the heading 'Steps', is a list of steps: 1. Welcome, 2. Enter Serial Number (highlighted in blue), 3. Verify Storage System, 4. Configure Networking, 5. Configure Time, 6. Change Password, 7. Verify Configuration, 8. Progress, and 9. Results. The main area on the right is titled 'Enter Storage System Serial Number'. It contains the instruction: 'Enter the storage system serial number of the storage system you want to set up. For more information on locating this 7-digit serial number, see your *Installation Guide*.' Below this is a 'Note': 'Note: During the initial storage system setup process, the Service Processor must be on the same subnet of the network as the storage system that you are configuring.' A text input field labeled 'Serial Number: *' contains the value '0000000'. At the bottom of the main area, it says 'Locating storage system...' above a progress bar with a blue and white checkered pattern. At the very bottom of the window are four buttons: '< Prev', 'Next >', 'Finish', and 'Cancel'.

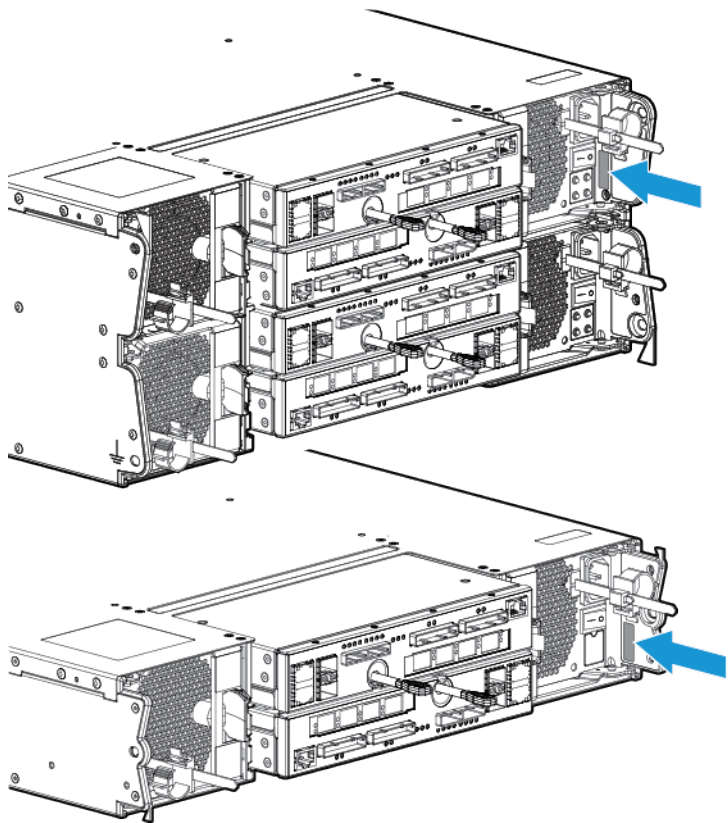
Steps	Enter Storage System Serial Number
1. Welcome	Enter the storage system serial number of the storage system you want to set up. For more information on locating this 7-digit serial number, see your <i>Installation Guide</i>. Note: During the initial storage system setup process, the Service Processor must be on the same subnet of the network as the storage system that you are configuring. Serial Number: * 0000000 Locating storage system...
2. Enter Serial Number	
3. Verify Storage System	
4. Configure Networking	
5. Configure Time	
6. Change Password	
7. Verify Configuration	
8. Progress	
9. Results	

< Prev Next > Finish Cancel

NOTE: The following illustration points to the location of the serial number which is situated on the side of the right rear node enclosure PCM and adjacent to the power switch. The serial number begins with 16 (for example, serial number: 1624635).

The StoreServ 7-digit serial number can also be found in the product documentation provided with your system.

Figure 62 Serial Number Label Locations



Verify Storage System

On the **Verify Storage System** page, verify all the system information is correct, and then click **Next**.

Figure 63 Verify Storage System Page

HP 3PAR Storage System Setup Wizard	
Steps	Verify Storage System
1. Welcome	The following storage system was found. Verify that this is the correct storage system you want to set up.
2. Enter Serial Number	
3. Verify Storage System	Serial Number: 0000000
4. Configure Networking	Model: HP_3PAR 7400
5. Configure Time	HP 3PAR OS: 3.1.2 (MU1)
6. Change Password	Nodes: 2
7. Verify Configuration	This storage system is ready to be initialized.
8. Progress	
9. Results	
< Prev Next > Finish Cancel	

Configure Networking

On the **Configure Networking** page, complete the required fields and click **Next**.

- Storage System Name
- IPv4 Configuration
 - IPv4 Address
 - Subnet Mask
 - Gateway

Figure 64 Configure Networking Page

The screenshot shows the 'HP 3PAR Storage System Setup Wizard' window. On the left, a 'Steps' list shows the progression from 'Welcome' to 'Results', with '4. Configure Networking' highlighted. The main area is titled 'Configure Networking' and contains the instruction: 'Enter a name for your storage system and then configure the IP address.' Below this, there is a text input field for 'Storage System Name' with a red asterisk indicating it is required. Further down, an 'IPv4 Configuration' section contains three more required fields: 'IPv4 Address' (placeholder: XXX.XXX.XX.XXX), 'Subnet Mask' (placeholder: XXX.XXX.XXX.X), and 'Gateway' (placeholder: XXX.XXX.XX.X). At the bottom right of the wizard, there are four buttons: '< Prev', 'Next >', 'Finish', and 'Cancel'.

Configuring Time

On the **Configure Time** page, the **Copy time options from the Service Processor** option is selected by default and is automatically populated with the time and date entered in the SP wizard. Select the **Enter data and time manually** option if you want to manually enter the date and time. If you select **Automatic**, complete the **NTP Server** field and click **Test** to get the specified NTP time. In the **Time Zone** section, select the appropriate region. Click **Next**.

Figure 65 Configure Time Page

HP 3PAR Storage System Setup Wizard

Steps

1. Welcome

2. Enter Serial Number

3. Verify Storage System

4. Configure Networking

5. Configure Time

6. Change Password

7. Verify Configuration

8. Progress

9. Results

Configure Time

Enter the current date and time for the storage system.

☒ Copy time options from the Service Processor

Service Processor Settings

Date and Time: 4/1/2013 14:29.49

Time Zone: America/Los Angeles

☐ Enter date and time manually

General

☒ Manual

Date: 04/01/2013

Time: 14 : 28

☐ Automatic

NTP Server:

Test

Test Results: No NTP test has been run.

Time Zone

Region: Africa / Abidjan

< Prev

Next >

Finish

Cancel

Change Password

This login profile is used to add this storage system to the Service Processor and for initial administrative access to the storage system. When updating of password is complete, click **Next**.

NOTE: Passwords for the **3paradm** username can include all printable characters and be between 6-8 characters in length.

Figure 66 Change Password Page

The screenshot shows the 'HP 3PAR Storage System Setup Wizard' window. The title bar reads 'HP 3PAR Storage System Setup Wizard'. The window is divided into two main sections. On the left, under the heading 'Steps', is a list of steps: 1. Welcome, 2. Enter Serial Number, 3. Verify Storage System, 4. Configure Networking, 5. Configure Time, 6. **Change Password** (highlighted in blue), 7. Verify Configuration, 8. Progress, and 9. Results. The main area on the right is titled 'Change Password for Storage System Login'. It contains the following text: 'Enter a password for the 3paradm login. You will use this login to log into your storage system for the first time. The wizard also uses this login to automatically add the new storage system to the Service Processor configured for this storage system.' Below this is a 'Note: The password must be between 6-8 characters in length.' The form includes a 'User:' label with the value '3paradm' and two password fields. The first is labeled 'Password: *' and the second is labeled 'Confirm Password: *'. Both fields contain eight dots. At the bottom right of the window are four buttons: '< Prev', 'Next >' (highlighted in blue), 'Finish', and 'Cancel'.

Steps	Change Password for Storage System Login
1. Welcome	Enter a password for the 3paradm login. You will use this login to log into your storage system for the first time. The wizard also uses this login to automatically add the new storage system to the Service Processor configured for this storage system. Note: The password must be between 6-8 characters in length. User: 3paradm Password: * [password field] Confirm Password: * [password field]
2. Enter Serial Number	
3. Verify Storage System	
4. Configure Networking	
5. Configure Time	
6. Change Password	
7. Verify Configuration	
8. Progress	
9. Results	

< Prev Next > Finish Cancel

Verify Configuration

The **Verify Configuration** page shows all the selected options and this page cannot be modified. To modify the selected options, click **Prev**. To proceed, click **Next**.

Figure 67 Verify Configuration Page

The screenshot shows the 'HP 3PAR Storage System Setup Wizard' window. On the left, a 'Steps' list contains nine items: 1. Welcome, 2. Enter Serial Number, 3. Verify Storage System, 4. Configure Networking, 5. Configure Time, 6. Change Password, 7. **Verify Configuration** (highlighted), 8. Progress, and 9. Results. The main area is titled 'Verify Configuration' and contains the instruction: 'Click **Next** to configure your storage system using the following settings:'. Below this, there are two configuration sections. The first is 'Network Options' with a 'Name: System Name' field. The second is 'IPv4 Configuration' with fields for 'Address: XXX.XXX.XX.XXX', 'Subnet Mask: XXX.XXX.XXX.X', and 'Gateway: XXX.XXX.XX.X'. A third section, 'Date and Time Configuration', shows 'Date and Time: 4/1/2013 14:30:51' and 'Time Zone: America/Los Angeles'. At the bottom right, there are four buttons: '< Prev', 'Next >' (highlighted with a blue border), 'Finish', and 'Cancel'.

Progress

The **Progress** page shows the setup process and operation status. The arrows indicate the operation is in progress, and the check marks indicate the operation is complete.

NOTE: Depending on the type of system configuration, the operation may take up to 30 minutes or longer to complete.

Figure 68 Progress Page

HP 3PAR Storage System Setup Wizard

Steps

1. Welcome

2. Enter Serial Number

3. Verify Storage System

4. Configure Networking

5. Configure Time

6. Change Password

7. Verify Configuration

8. **Progress**

9. Results

Progress

The storage system is now being set up. The Status column displays the progress of the storage system setup.

Setup Progress

Operation	Status
Storage system prepared for initialization	
Storage system hardware configuration check completed successfully	
Setting up system volumes completed successfully	
Storage system time successfully set	
3paradm password change successfully	
Stress tests started successfully	
Storage system network configuration completed successfully	
Add storage system to SP	
Finish initialization	

Status: Adding InServ to SP

< Prev

Next >

Finish

Cancel

Results

The **Results** page confirms the storage system is ready to use. Click **Finish**.

Figure 69 Results Page

HP 3PAR Storage System Setup Wizard

Steps

1. Welcome

2. Enter Serial Number

3. Verify Storage System

4. Configure Networking

5. Configure Time

6. Change Password

7. Verify Configuration

8. Progress

9. **Results**

Setup Progress and Results

Congratulations, your storage system is now ready for use! Click **Finish** to exit this wizard.

Note: The initialized storage system will run initialization tests for the next two hours. During this time, your host systems may experience slow I/O. You can find details about any issues the tests find in the HP 3PAR Management Console, in the Alert tab relevant to the issue.

Storage System Details

Serial Number: 0000000

Name: System Name

IPv4 Address: XXX.XXX.XX.XXX

HP 3PAR OS: 3.1.2 (MU1)

Next Steps:

Return to SmartStart to finish configuring the storage system and set up host systems.

Storage system successfully initialized

< Prev

Next >

Finish

Cancel

Launching the HP 3PAR Storage System Setup Wizard 93

Post-Installation System Tasks

The storage system setup is now complete. Perform the recommended tasks before using the system:

- Validating Remote Support
For more information, see [“Validating Remote Support”](#) (page 114).
- Identifying Physical Locations of the Logical Cage Numbers
For more information, see [“Identifying Physical Locations of the Logical Cage Numbers”](#) (page 116)
- Setting up notifications, performing system Health Check and InSplore with SPOCC
For more information, see *HP 3PAR Service Processor Onsite Customer Care User's Guide*.
- Configuring Hosts and creating Virtual Volumes with HP 3PAR SmartStart
For more information, see *HP 3PAR StoreServ 7000 Storage SmartStart Software User's Guide*.
- Creating LUNs and using the StoreServ
For more information, see *HP 3PAR Management Console User Guide*.

For additional support and other resources, see [“Support and Other Resources”](#) (page 95)

11 Support and Other Resources

Contacting HP

For worldwide technical support information, see the HP support website:

<http://www.hp.com/support>

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Specify the type of support you are requesting:

HP 3PAR storage system	Support request
HP 3PAR StoreServ 7200, 7400, and 7450 Storage systems	StoreServ 7000 Storage
HP 3PAR StoreServ 10000 Storage systems HP 3PAR T-Class storage systems HP 3PAR F-Class storage systems	3PAR or 3PAR Storage

HP 3PAR documentation

For information about:	See:
Supported hardware and software platforms	The Single Point of Connectivity Knowledge for HP Storage Products (SPOCK) website: SPOCK (http://www.hp.com/storage/spock)
Locating HP 3PAR documents	The HP Storage Information Library: Storage Information Library (http://www.hp.com/go/storage/docs/) By default, HP 3PAR Storage is selected under Products and Solutions .
Customer Self Repair procedures (media)	The HP Customer Self Repair Services Media Library: Customer Self Repair Services Media Library (http://h20464.www2.hp.com/index.html) Under Product category , select Storage . Under Product family , select 3PAR Storage Systems for HP 3PAR E-Class, F-Class, S-Class, and T-Class Storage Systems, or 3PAR StoreServ Storage for HP 3PAR StoreServ 10000 and 7000 Storage Systems.
HP 3PAR storage system software	
Storage concepts and terminology	<i>HP 3PAR StoreServ Storage Concepts Guide</i>
Using the HP 3PAR Management Console (GUI) to configure and administer HP 3PAR storage systems	<i>HP 3PAR Management Console User's Guide</i>

For information about:	See:
Using the HP 3PAR CLI to configure and administer storage systems	<i>HP 3PAR Command Line Interface Administrator's Manual</i>
CLI commands	<i>HP 3PAR Command Line Interface Reference</i>
Analyzing system performance	<i>HP 3PAR System Reporter Software User's Guide</i>
Installing and maintaining the Host Explorer agent in order to manage host configuration and connectivity information	<i>HP 3PAR Host Explorer User's Guide</i>
Creating applications compliant with the Common Information Model (CIM) to manage HP 3PAR storage systems	<i>HP 3PAR CIM API Programming Reference</i>
Migrating data from one HP 3PAR storage system to another	<i>HP 3PAR-to-3PAR Storage Peer Motion Guide</i>
Configuring the Secure Service Custodian server in order to monitor and control HP 3PAR storage systems	<i>HP 3PAR Secure Service Custodian Configuration Utility Reference</i>
Using the CLI to configure and manage HP 3PAR Remote Copy	<i>HP 3PAR Remote Copy Software User's Guide</i>
Updating HP 3PAR operating systems	<i>HP 3PAR Upgrade Pre-Planning Guide</i>
Identifying storage system components, troubleshooting information, and detailed alert information	<i>HP 3PAR F-Class, T-Class, and StoreServ 10000 Storage Troubleshooting Guide</i>
Installing, configuring, and maintaining the HP 3PAR Policy Server	<i>HP 3PAR Policy Server Installation and Setup Guide</i> <i>HP 3PAR Policy Server Administration Guide</i>

For information about:	See:
Planning for HP 3PAR storage system setup Hardware specifications, installation considerations, power requirements, networking options, and cabling information for HP 3PAR storage systems	
HP 3PAR 7200, 7400, and 7450 storage systems	<i>HP 3PAR StoreServ 7000 Storage Site Planning Manual</i> <i>HP 3PAR StoreServ 7450 Storage Site Planning Manual</i>
HP 3PAR 10000 storage systems	<i>HP 3PAR StoreServ 10000 Storage Physical Planning Manual</i> <i>HP 3PAR StoreServ 10000 Storage Third-Party Rack Physical Planning Manual</i>
Installing and maintaining HP 3PAR 7200, 7400, and 7450 storage systems	
Installing 7200, 7400, and 7450 storage systems and initializing the Service Processor	<i>HP 3PAR StoreServ 7000 Storage Installation Guide</i> <i>HP 3PAR StoreServ 7450 Storage Installation Guide</i> <i>HP 3PAR StoreServ 7000 Storage SmartStart Software User's Guide</i>
Maintaining, servicing, and upgrading 7200, 7400, and 7450 storage systems	<i>HP 3PAR StoreServ 7000 Storage Service Guide</i> <i>HP 3PAR StoreServ 7450 Storage Service Guide</i>
Troubleshooting 7200, 7400, and 7450 storage systems	<i>HP 3PAR StoreServ 7000 Storage Troubleshooting Guide</i> <i>HP 3PAR StoreServ 7450 Storage Troubleshooting Guide</i>
Maintaining the Service Processor	<i>HP 3PAR Service Processor Software User Guide</i> <i>HP 3PAR Service Processor Onsite Customer Care (SPOCC) User's Guide</i>
HP 3PAR host application solutions	
Backing up Oracle databases and using backups for disaster recovery	<i>HP 3PAR Recovery Manager Software for Oracle User's Guide</i>
Backing up Exchange databases and using backups for disaster recovery	<i>HP 3PAR Recovery Manager Software for Microsoft Exchange 2007 and 2010 User's Guide</i>
Backing up SQL databases and using backups for disaster recovery	<i>HP 3PAR Recovery Manager Software for Microsoft SQL Server User's Guide</i>
Backing up VMware databases and using backups for disaster recovery	<i>HP 3PAR Management Plug-in and Recovery Manager Software for VMware vSphere User's Guide</i>
Installing and using the HP 3PAR VSS (Volume Shadow Copy Service) Provider software for Microsoft Windows	<i>HP 3PAR VSS Provider Software for Microsoft Windows User's Guide</i>
Best practices for setting up the Storage Replication Adapter for VMware vCenter	<i>HP 3PAR Storage Replication Adapter for VMware vCenter Site Recovery Manager Implementation Guide</i>
Troubleshooting the Storage Replication Adapter for VMware vCenter Site Recovery Manager	<i>HP 3PAR Storage Replication Adapter for VMware vCenter Site Recovery Manager Troubleshooting Guide</i>
Installing and using vSphere Storage APIs for Array Integration (VAAI) plug-in software for VMware vSphere	<i>HP 3PAR VAAI Plug-in Software for VMware vSphere User's Guide</i>

Typographic conventions

Table 15 Document conventions

Convention	Element
Bold text	• Keys that you press • Text you typed into a GUI element, such as a text box • GUI elements that you click or select, such as menu items, buttons, and so on
Monospace text	• File and directory names • System output • Code • Commands, their arguments, and argument values
<Monospace text in angle brackets>	• Code variables • Command variables
Bold monospace text	• Commands you enter into a command line interface • System output emphasized for scannability



WARNING! Indicates that failure to follow directions could result in bodily harm or death, or in irreversible damage to data or to the operating system.



CAUTION: Indicates that failure to follow directions could result in damage to equipment or data.

NOTE: Provides additional information.

Required

Indicates that a procedure must be followed as directed in order to achieve a functional and supported implementation based on testing at HP.

HP 3PAR branding information

- The server previously referred to as the "InServ" is now referred to as the "HP 3PAR StoreServ Storage system."
- The operating system previously referred to as the "InForm OS" is now referred to as the "HP 3PAR OS."
- The user interface previously referred to as the "InForm Management Console (IMC)" is now referred to as the "HP 3PAR Management Console."
- All products previously referred to as "3PAR" products are now referred to as "HP 3PAR" products.

12 Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hp.com). Include the document title and part number, version number, or the URL when submitting your feedback.

A HP 3PAR StoreServ 7000 (Controller and Storage) and M6700 Series (Storage) Contents List

The following components may vary, depending on system configuration:

- Appearance of components
- Quantity of components
- Whether or not the component is included with the system

HP 3PAR StoreServ 7000 and M6700 Components

Figure 70 2U Enclosure

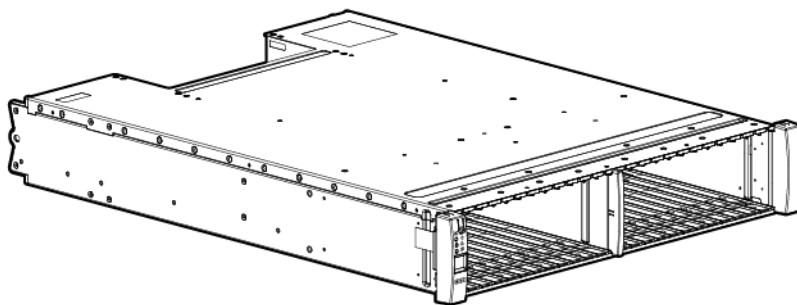


Figure 71 4U Enclosure

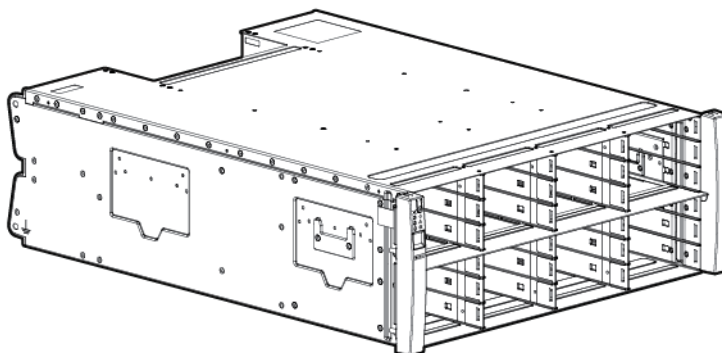


Figure 72 7000 Series Controller

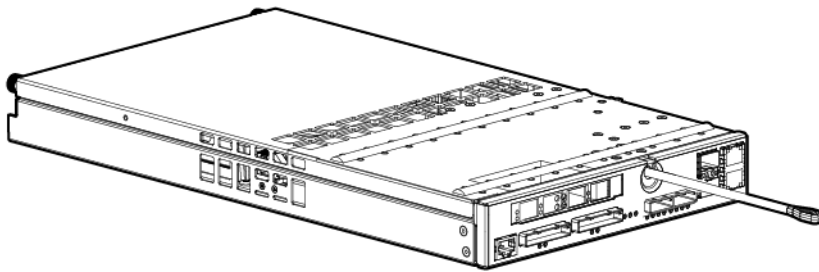


Figure 73 M6700 Series I/O Module

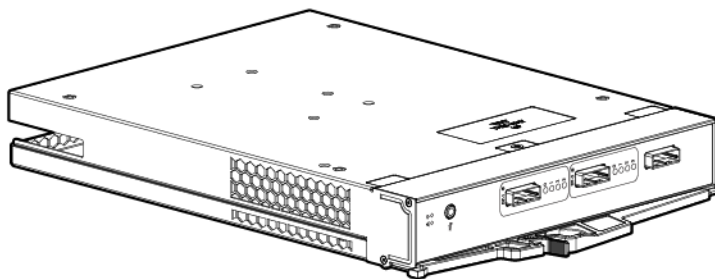


Figure 74 7000 Series PCM

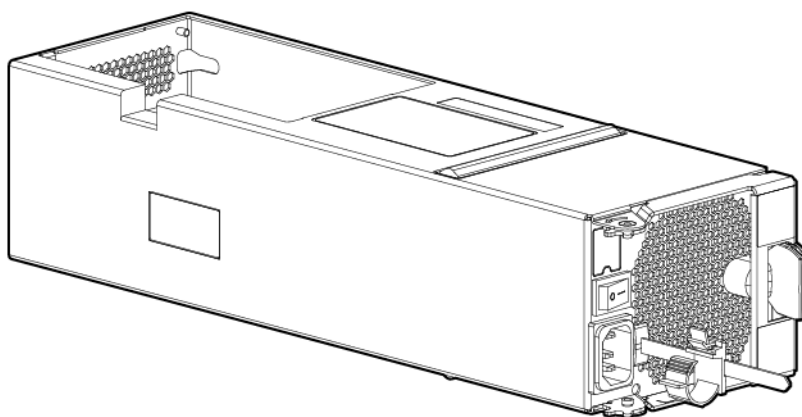


Figure 75 M6700 Series PCM

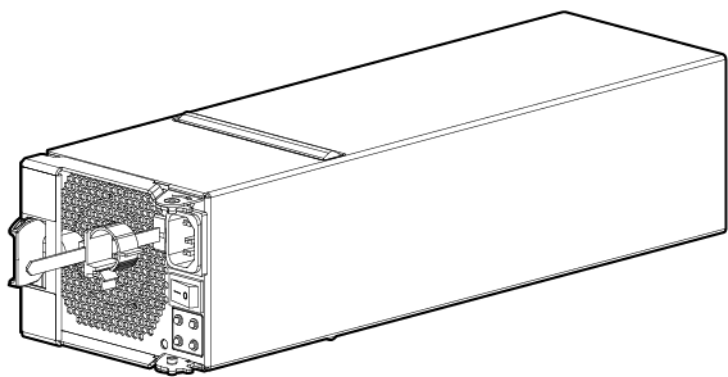


Figure 76 SFF Drive Assembly Blank

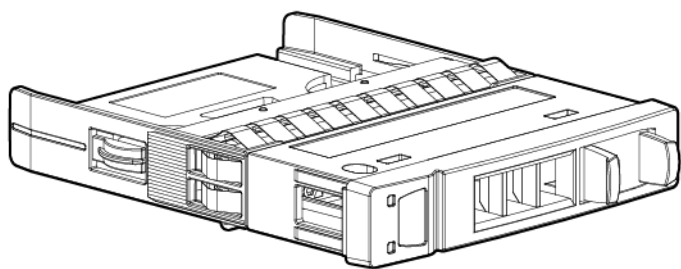


Figure 77 SFF Drive Assembly

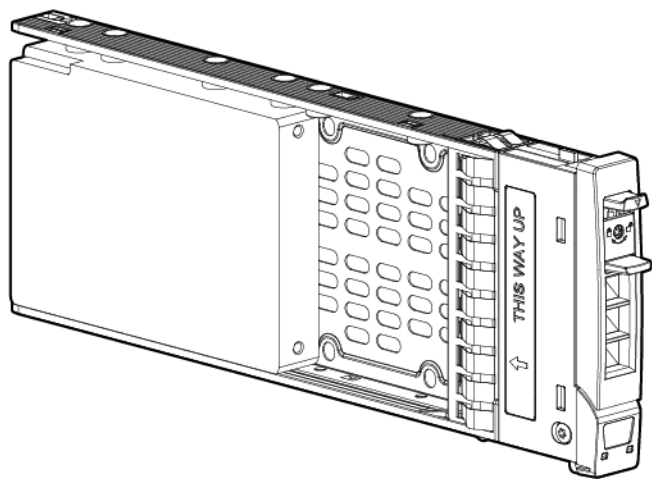


Figure 78 LFF Drive Assembly Blank

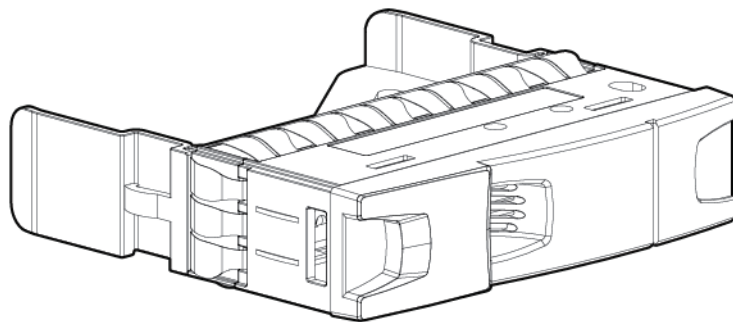


Figure 79 LFF Drive Assembly

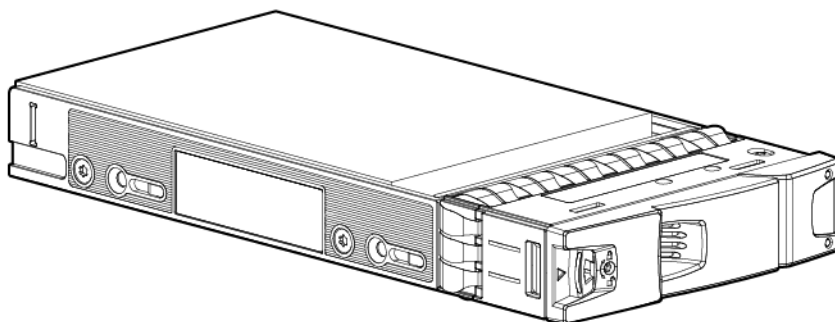
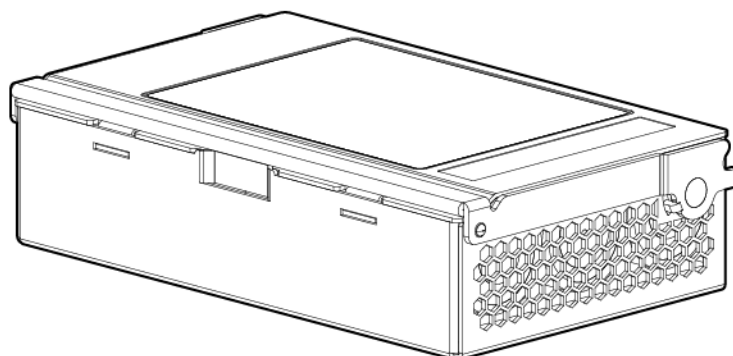


Figure 80 7000 Series Battery (Installed in 7000 Series PCM)



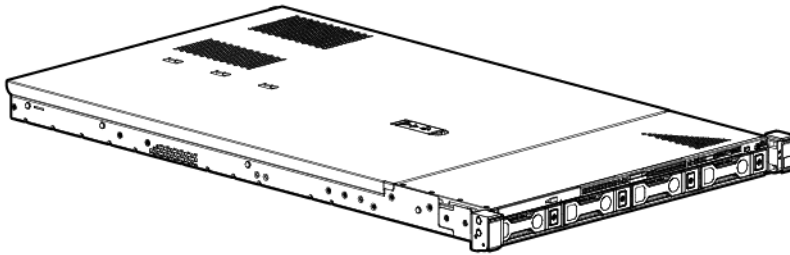
Accessory Kits

The following accessory kits can be included with your system:

- Power cords
- SAS cables
- Cable bundle ties
- Hook and loop straps
- Product documentation
- Various enclosure labels
- RJ45 to serial crossover cable
- RJ45 to serial cable
- CAT5 cable
- Ethernet crossover cable
- Enclosure rack mounting fasteners
- Software kits
- Entitlement certificate
- Node CSR and HBA CSU limitations
- 1U filler panels
- Link cables
- Shipping bracket kit

Service Processor Field Replaceable Unit (FRU)

Figure 81 Service Processor DL320e



Rail Kits

The following items are included in the rail kits:

Figure 82 Right and Left 2U Rail Subassembly (Right Subassembly Shown)

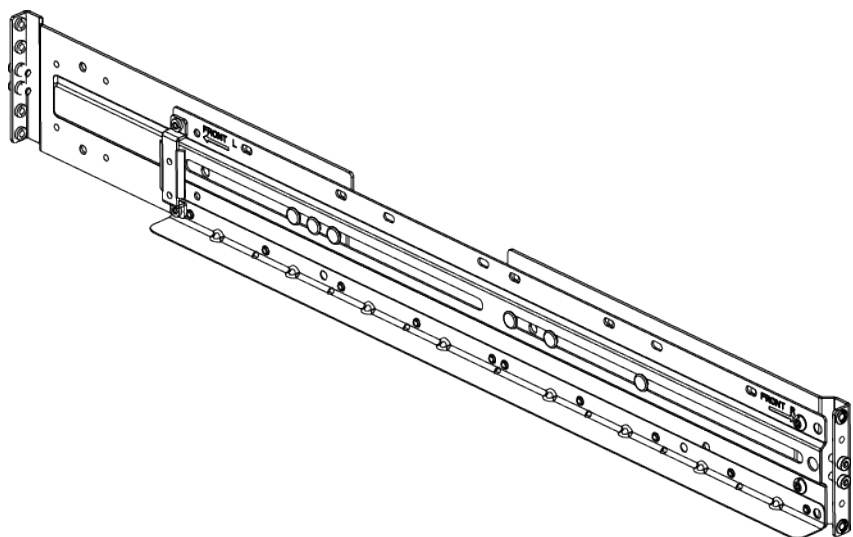


Figure 83 Right and Left 4U Rail Subassembly (Right Subassembly Shown)

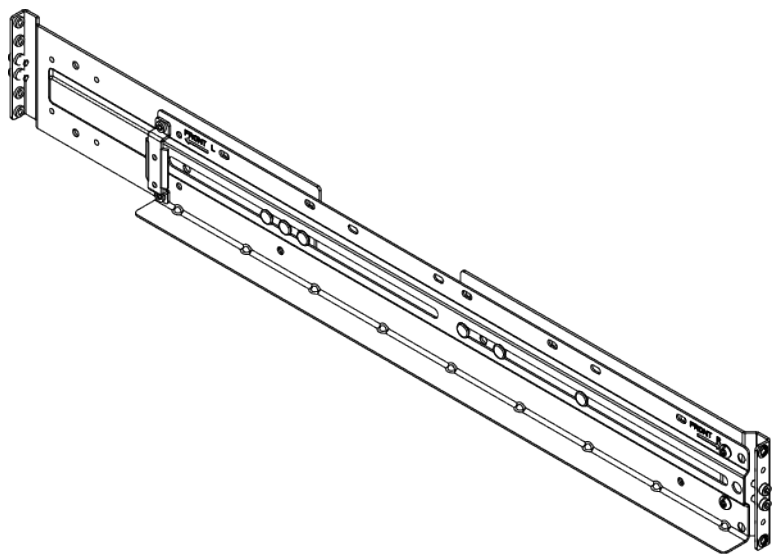


Figure 84 M5 Shoulder Screw for Rack Mount

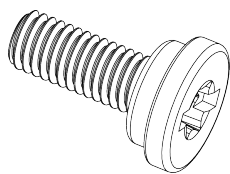


Figure 85 M5 Screw for Middle Support Bracket

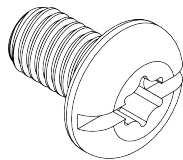


Figure 86 Middle Support Bracket

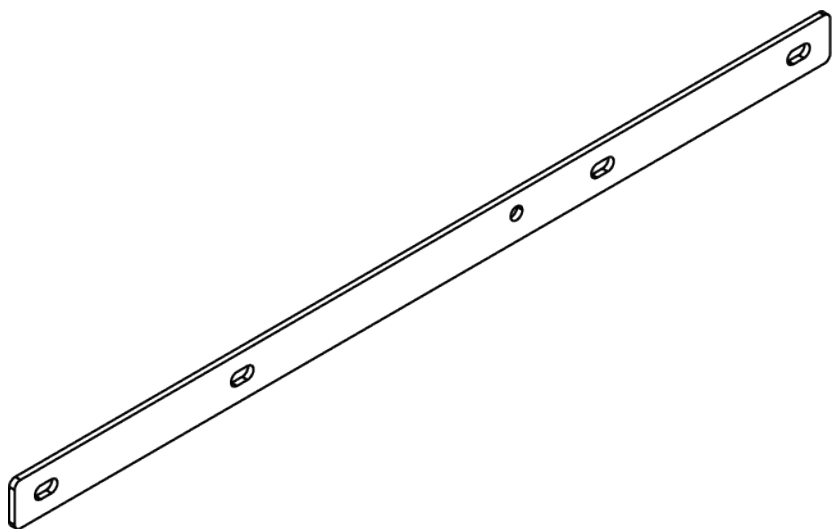
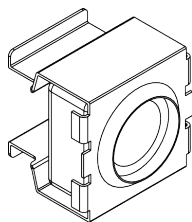


Figure 87 M5 Cage Nut



B Enhancing Security with Data Encryption

HP 3PAR Data Encryption security feature allows you to encrypt all specifically formatted hard drives on the storage system with an authentication key and the use of Self Encrypting Drives (SEDs).

When a Data Encryption license is registered, you must manually enable the encryption feature on the system. When the encryption feature is enabled successfully, all the drives in the system become automatically set in an encrypted state. You can review the encryption status of individual hard disk drives within the system **Summary** tab of the HP 3PAR Management Console.

This feature allows you to perform the following encryption-related tasks:

- Check encryption status
- Enable encryption
- Back up an authentication key
- Restore an authentication key
- Generate a new key
- Recover a key

For more information about enabling the feature, see the *HP 3PAR Management Console User's Guide*.



CAUTION: HP recommends retaining all acquired software product licenses for reference and maintenance purposes. For assistance with licensing, contact HP Support or visit www.hp.com/software/licensing.

C Adding Disk Drives and Expansion Drive Enclosures

HP 3PAR StoreServ 7000 products include 3PAR licensing that enables all functionality associated with the system. A failure to register the license key may limit access and restrict upgrading of your system. Before you proceed with upgrading, verify all applicable licenses associated with the system are registered.

For assistance with registering HP software licenses, visit <http://hp.com/support>.

There are two types of drive enclosures that are used for expansion:

- The HP M6710 Drive Enclosure (2U24) holds up to 24, 2.5 inch SFF SAS disk drives arranged vertically in a single row at the front of the enclosure. The back of the enclosure includes two 580 W PCMs and two I/O modules.
- The HP M6720 Drive Enclosure (4U24) holds up to 24, 3.5 LFF SAS disk drives, arranged horizontally with four columns of six disk drives. The back of the enclosure includes two 580 W PCMs and two I/O modules.

Information About Drive Enclosure Upgrades

- The number of drive enclosures attached to a specific node pair should be determined by the desired RAID set size and HA Cage protection requirements. Drive enclosures should be added and configured to meet the HA Cage protection requirement for a specific node pair, and also consider the RAID set requirement of the customer.
- The distribution of drive enclosures between DP-1 and DP-2 of the node should be done to achieve maximum balance across the ports.
- When adding both 2U and 4U drive enclosures, they should be mixed on SAS chains (DP-1 and DP-2), added in pairs across node pairs on a four-node system, and balanced across SAS ports on each controller pair.

Drive Enclosure Expansion Limits

The disk drives in the node enclosure are connected internally through DP-1.

The 7200 node enclosure can support up to five drive enclosures, two connected through DP-1 and three connected through DP-2 on the nodes.

The 7400 node enclosure can support up to nine drive enclosures, four connected through DP-1 and five connected through DP-2 on the nodes. The 7400 node enclosure contains 2 nodes in one enclosure and a four-node 7400 configuration doubles the amount of supported drive enclosures to 18.

Information About Disk Drive Upgrades

You can install additional disk drives to upgrade partially populated drive enclosures.



WARNING! If the StoreServ is enabled with the Data-at-Rest (DAR) encryption feature, only use the self-encrypting drives (SED). Using a non-self-encrypting drive may cause errors during the upgrade process.

NOTE: SSDs have a limited number of writes that can occur before reaching the SSD's write endurance limit. This limit is generally high enough so wear out will not occur during the expected service life of an HP 3PAR StoreServ under the great majority of configurations, IO patterns, and workloads. HP 3PAR StoreServ tracks all writes to SSDs and can report the percent of the total write endurance limit that has been used. This allows any SSD approaching the write endurance limit to be proactively replaced before they are automatically spared out. An SSD has reached the maximum usage limit once it exceeds its write endurance limit. Following the product warranty period, SSDs that have exceeded the maximum usage limit will not be repaired or replaced under HP support contracts.

- The first expansion drive enclosure added to a system must be populated with the same number of disk drives as the node enclosure.
- Disks must be identical pairs.
- The same number of disk drives and type should be added to all of the drive enclosures in the system.
- The minimum addition to a two-node system without expansion drive enclosures is two identical disk drives.
- The minimum addition to a four-node system without expansion drive enclosures is four identical disk drives.

HP M6710 Drive Enclosure (2U24) Disk Drive Placement

Disk drive pairs should be placed in the lowest available slot numbers.

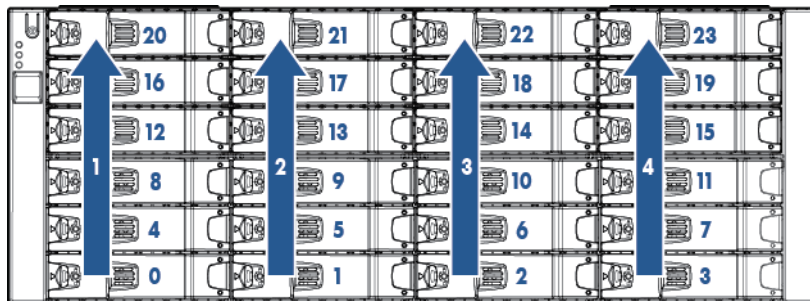
Figure 88 HP M6710 Drive Enclosure (2U24) Disk Drive Placement Order



HP M6720 Drive Enclosure (4U24) Disk Drive Placement

Disk drive pairs should be populated in columns and in the lowest available vertical slots in that column.

Figure 89 M6720 Drive Enclosure (4U24) Disk Drive Placement Order



NOTE: For optimal utilization and performance, disk drive quantities and types should be configured symmetrically across all drive enclosures in the system.

Adding Disk Drives

There are five processes for adding hard drives:

- Checking initial status
- Inserting hard drives
- Checking status
- Checking progress
- Completing the upgrade

Checking Initial Status

Under **Systems**, select **Physical Disks**, and in the right pane, select the **Physical Disks** tab.

Figure 90 Physical Disks Tab

ID	Cage	Position (Cage:Ma	Device Type	Device Protocol	Device RPM (K)	State	Total Capacity (GB)	Free Capacity (GB)	Allocated Capacity (GB)	Allocated Percentage	Port A (Node:Slc	Port B (Node:Slc
0	cage0	0:0:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:1*	0:0:1
1	cage0	0:1:0	FC	SAS	10	Normal	408.000	305.000	103.000	25%	1:0:1*	0:0:1*
2	cage0	0:2:0	FC	SAS	10	Normal	408.000	307.000	101.000	24%	1:0:1*	0:0:1
3	cage0	0:3:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:1*	0:0:1*
4	cage0	0:4:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:1*	0:0:1
5	cage0	0:5:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:1*	0:0:1*
6	cage1	1:0:0	NL	SAS	7	Normal	1,805.000	1,339.000	466.000	25%	1:0:1*	0:0:1
7	cage1	1:4:0	NL	SAS	7	Normal	1,805.000	1,339.000	466.000	25%	1:0:1*	0:0:1*
8	cage1	1:8:0	NL	SAS	7	Normal	1,805.000	1,339.000	466.000	25%	1:0:1*	0:0:1
9	cage1	1:12:0	NL	SAS	7	Normal	1,805.000	1,339.000	466.000	25%	1:0:1*	0:0:1*
10	cage1	1:16:0	NL	SAS	7	Normal	1,805.000	1,340.000	465.000	25%	1:0:1*	0:0:1
11	cage1	1:20:0	NL	SAS	7	Normal	1,805.000	1,340.000	465.000	25%	1:0:1*	0:0:1*
12	cage2	2:0:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:2*	0:0:2
13	cage2	2:1:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:2*	0:0:2*
14	cage2	2:2:0	FC	SAS	10	Normal	408.000	307.000	101.000	24%	1:0:2*	0:0:2
15	cage2	2:3:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:2*	0:0:2*
16	cage2	2:4:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:2*	0:0:2
17	cage2	2:5:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:2*	0:0:2*

Inserting Disk Drives

In this example, two disk drives are added to each of the three enclosures.

Checking Status

The display refreshes periodically, and you should see the inserted disk drives as **New** in the **State** column. They are ready to be admitted into the system, which occurs automatically.

Figure 91 New State of Inserted Disk Drives

ID	Cage	Position (Cage:Ma)	Device Type	Device Protocol	Device RPM (K)	State	Total Capacity (GB)	Free Capacity (GB)	Allocated Capacity (GB)	Allocated Percentage	Port A (Node:Sk)	Port B (Node:Sk)
--	cage0	0:6:0	FC	SAS	10	New	408.000	0.000	0.000	0%	1:0:1*	0:0:1
--	cage2	2:6:0	FC	SAS	10	New	408.000	0.000	0.000	0%	1:0:2*	0:0:2
--	cage2	2:7:0	FC	SAS	10	New	408.000	0.000	0.000	0%	1:0:2	0:0:2*
--	cage1	1:1:0	NL	SAS	7	New	1,805.000	0.000	0.000	0%	1:0:1	0:0:1*
--	cage1	1:5:0	NL	SAS	7	New	1,805.000	0.000	0.000	0%	1:0:1*	0:0:1
--	cage0	0:7:0	FC	SAS	10	New	408.000	0.000	0.000	0%	1:0:1	0:0:1*
0	cage0	0:0:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:1*	0:0:1
1	cage0	0:1:0	FC	SAS	10	Normal	408.000	305.000	103.000	25%	1:0:1	0:0:1*
2	cage0	0:2:0	FC	SAS	10	Normal	408.000	307.000	101.000	24%	1:0:1*	0:0:1
3	cage0	0:3:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:1	0:0:1*
4	cage0	0:4:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:1*	0:0:1
5	cage0	0:5:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:1	0:0:1*
6	cage1	1:0:0	NL	SAS	7	Normal	1,805.000	1,339.000	466.000	25%	1:0:1*	0:0:1
7	cage1	1:4:0	NL	SAS	7	Normal	1,805.000	1,339.000	466.000	25%	1:0:1	0:0:1*
8	cage1	1:8:0	NL	SAS	7	Normal	1,805.000	1,339.000	466.000	25%	1:0:1*	0:0:1
9	cage1	1:12:0	NL	SAS	7	Normal	1,805.000	1,339.000	466.000	25%	1:0:1	0:0:1*
10	cage1	1:16:0	NL	SAS	7	Normal	1,805.000	1,340.000	465.000	25%	1:0:1*	0:0:1
11	cage1	1:20:0	NL	SAS	7	Normal	1,805.000	1,340.000	465.000	25%	1:0:1	0:0:1*
12	cage2	2:0:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:2*	0:0:2
13	cage2	2:1:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:2	0:0:2*
14	cage2	2:2:0	FC	SAS	10	Normal	408.000	307.000	101.000	24%	1:0:2*	0:0:2
15	cage2	2:3:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:2	0:0:2*
16	cage2	2:4:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:2*	0:0:2
17	cage2	2:5:0	FC	SAS	10	Normal	408.000	306.000	102.000	25%	1:0:2	0:0:2*

Within 6 minutes (depending on the system load and the size of the upgrade), the **State** of the new disk drives changes to **Normal**, and the system starts to initialize the chunklets to ready for use. Output indicates that each of the six added disk drives still have normal and spare chunklets to be initialized.

NOTE: The system can be used normally, but newly added capacity must be initialized before it can be allocated.

Checking Progress

On the **Physical Disks** tab, in the drop-down list, select **Chunklet Usage**.

Figure 92 Chunklet Usage

ID	Cage	Position (Cage:M)	Device Type	Device Protocol	Device RPM (K)	State	Total Chunklets	Normal Used OK	Normal Used Failed	Normal Unused Free	Normal Unused Unit
0	cage0	0:0:0	FC	SAS	10	Normal	408	34	0	323	0
1	cage0	0:1:0	FC	SAS	10	Normal	408	35	0	322	0
2	cage0	0:2:0	FC	SAS	10	Normal	408	33	0	324	0
3	cage0	0:3:0	FC	SAS	10	Normal	408	34	0	323	0
4	cage0	0:4:0	FC	SAS	10	Normal	408	34	0	323	0
5	cage0	0:5:0	FC	SAS	10	Normal	408	34	0	323	0
6	cage1	1:0:0	NL	SAS	7	Normal	1805	0	0	1455	0
7	cage1	1:4:0	NL	SAS	7	Normal	1805	0	0	1455	0
8	cage1	1:8:0	NL	SAS	7	Normal	1805	0	0	1456	0
9	cage1	1:12:0	NL	SAS	7	Normal	1805	0	0	1456	0
10	cage1	1:16:0	NL	SAS	7	Normal	1805	0	0	1456	0
11	cage1	1:20:0	NL	SAS	7	Normal	1805	0	0	1456	0
12	cage2	2:0:0	FC	SAS	10	Normal	408	34	0	323	0
13	cage2	2:1:0	FC	SAS	10	Normal	408	34	0	323	0
14	cage2	2:2:0	FC	SAS	10	Normal	408	33	0	324	0
15	cage2	2:3:0	FC	SAS	10	Normal	408	34	0	323	0
16	cage2	2:4:0	FC	SAS	10	Normal	408	34	0	323	0
17	cage2	2:5:0	FC	SAS	10	Normal	408	34	0	323	0
18	cage0	0:6:0	FC	SAS	10	Normal	408	0	0	0	357
19	cage0	0:7:0	FC	SAS	10	Normal	408	0	0	0	357
20	cage1	1:1:0	NL	SAS	7	Normal	1805	0	0	0	1456
21	cage1	1:5:0	NL	SAS	7	Normal	1805	0	0	0	1456
22	cage2	2:6:0	FC	SAS	10	Normal	408	0	0	0	357
23	cage2	2:7:0	FC	SAS	10	Normal	408	0	0	0	357

Completing the Upgrade

In the **Systems** pane, select **Physical Disks**, and then select the **Physical Disks** tab. On the **Physical Disks** tab, in the drop-down list, select **Chunklet Usage**.

Figure 93 Upgrade Completion Display

ID	Cage	Position (Cage:Ma)	Device Type	Device Protocol	Device RPM (K)	State	Total Chunklets	Normal Used OK	Normal Used Failed	Normal Unused Free	Normal Unused Uninit	Normal Unused Unavailable	Normal Unused Failed	Spare Used OK	Spare Used Failed	Spare Unused Free	Spare Unused Uninit	Spare Unused Failed
0	cage0	0:0:0	FC	SAS	10	Normal	408	34	0	323	0	0	0	0	0	51	0	0
1	cage0	0:1:0	FC	SAS	10	Normal	408	35	0	322	0	0	0	0	0	51	0	0
2	cage0	0:2:0	FC	SAS	10	Normal	408	33	0	324	0	0	0	0	0	51	0	0
3	cage0	0:3:0	FC	SAS	10	Normal	408	34	0	323	0	0	0	0	0	51	0	0
4	cage0	0:4:0	FC	SAS	10	Normal	408	34	0	323	0	0	0	0	0	51	0	0
5	cage0	0:5:0	FC	SAS	10	Normal	408	34	0	323	0	0	0	0	0	51	0	0
6	cage1	1:0:0	NL	SAS	7	Normal	1805	0	0	1455	0	0	0	0	0	350	0	0
7	cage1	1:4:0	NL	SAS	7	Normal	1805	0	0	1455	0	0	0	0	0	350	0	0
8	cage1	1:8:0	NL	SAS	7	Normal	1805	0	0	1456	0	0	0	0	0	349	0	0
9	cage1	1:12:0	NL	SAS	7	Normal	1805	0	0	1456	0	0	0	0	0	349	0	0
10	cage1	1:16:0	NL	SAS	7	Normal	1805	0	0	1456	0	0	0	0	0	349	0	0
11	cage1	1:20:0	NL	SAS	7	Normal	1805	0	0	1456	0	0	0	0	0	349	0	0
12	cage2	2:0:0	FC	SAS	10	Normal	408	34	0	323	0	0	0	0	0	51	0	0
13	cage2	2:1:0	FC	SAS	10	Normal	408	34	0	323	0	0	0	0	0	51	0	0
14	cage2	2:2:0	FC	SAS	10	Normal	408	33	0	324	0	0	0	0	0	51	0	0
15	cage2	2:3:0	FC	SAS	10	Normal	408	34	0	323	0	0	0	0	0	51	0	0
16	cage2	2:4:0	FC	SAS	10	Normal	408	34	0	323	0	0	0	0	0	51	0	0
17	cage2	2:5:0	FC	SAS	10	Normal	408	34	0	323	0	0	0	0	0	51	0	0
18	cage0	0:6:0	FC	SAS	10	Normal	408	0	0	357	0	0	0	0	0	51	0	0
19	cage0	0:7:0	FC	SAS	10	Normal	408	0	0	357	0	0	0	0	0	51	0	0
20	cage1	1:1:0	NL	SAS	7	Normal	1805	0	0	1456	0	0	0	0	0	349	0	0
21	cage1	1:5:0	NL	SAS	7	Normal	1805	0	0	1456	0	0	0	0	0	349	0	0
22	cage2	2:6:0	FC	SAS	10	Normal	408	0	0	357	0	0	0	0	0	51	0	0
23	cage2	2:7:0	FC	SAS	10	Normal	408	0	0	357	0	0	0	0	0	51	0	0
							20968	407	0	16951	0	0	0	0	0	3610	0	0

Chunklet initialization can take several hours to complete and the output of the available capacity is displayed.

NOTE: The system can be used normally, but newly added capacity must be initialized before it can be allocated.

Adding Expansion Drive Enclosures

To add an expansion drive enclosure:

1. Install the expansion drive enclosure. See [“Installing Enclosures ” \(page 38\)](#).
 - a. Install the disk drives. See [“Installing a Disk Drive” \(page 41\)](#).
 - b. Cable the enclosures to each other by using SAS cables. See [“Cabling the Storage System” \(page 50\)](#).

NOTE: For the drive enclosures, verify that the activity LED is functional (all four LEDs will be lit solid green), and the LED at the front of the enclosure has a number.

2. Install the 580 W PCMs into the drive enclosure.
3. Install the power cables to the PCMs and press the power switch to ON.
4. After you have completed the physical installation of the enclosures and disk drives, cable the drive enclosure to the controller nodes.
5. Verify the upgrade is successful.

D Installing HP 3PAR Storage Software When HP 3PAR SmartStart is Unavailable

Use the following instructions to manually launch the setup wizards to configure the SP and StoreServ from a browser if you are not using HP 3PAR SmartStart or SmartStart is unavailable. Review the prerequisites and information about storage and system components before proceeding.

Prerequisites

Verify the following preliminary tasks are completed:

- Cabling must be completed, and the storage system LEDs indicate that cables are properly installed and the storage system is operating normally.
- The HP 3PAR Service Processor is on the same network as the storage system.
- Either the HP 3PAR Service Processor is powered on, or the virtual Service Processor is deployed and powered on.
- The StoreServ must be connected to the same subnet of the SP, powered on, and in a non-initialized state for the setup process to verify the StoreServ.

Launching the SP Setup Wizard

To launch the SP setup wizard:

1. Launch a web browser.
2. Enter the SP URL address. For example:
`https://10.0.120.227/sp/SpSetupWizard.html`.
3. In the **User Name** text box, type `setupusr` and leave the password blank. You can change the password in the SP Setup wizard.
4. Continue on to the following steps to complete the setup. See [“Welcome Page” \(page 74\)](#).

Launching the Storage System Setup Wizard

To launch the storage system setup wizard:

1. Launch a web browser.
2. Enter the SP URL address. For example:
`https://10.0.120.227/sp/StorageSystemSetupWizard.html`.
3. In the **User Name** text box, type `setupusr` and enter the password previously set during the SP setup.
4. Continue on to the following steps to complete the setup. See [“Welcome” \(page 86\)](#).

Installing the Management Console When HP 3PAR SmartStart is Unavailable

1. Insert the Management Console DVD.
2. Follow the setup instructions. If you encounter issues, view the Management Console Readme document.

NOTE: To log into your storage system using the Management Console, enter username `3paradm` and the `3paradm` password used during set up with the Storage System Setup wizard.

E Validating Remote Support

After making any networking changes or if the Service Processor Setup Wizard is unable to verify remote support connectivity, use the SPMaint module in SPOCC to test the communication with remote support.

NOTE: For a current list of supported browsers for SPOCC, see the Single Point of Connectivity Knowledge for HP Storage Products (SPOCK), located at <http://www.hp.com/storage/spock>.

1. Open a supported type of web browser. Enter the SP IP address (https://<SP_IP>) to log on to SPOCC.

Figure 94

2. Enter your login credentials. Click **Log In**.
3. Click **SPmaint**.

Figure 95 SPOCC Support Page

hp 3PAR Service Processor Onsite Customer Care - SPOCC User: SP0123 | Sign Out

Service Processor - Support

InServ

InServ	System	Version	IP	Action
383	1400383	3.1.2.370	192.192.00.192	- Health Check - Guided Maintenance - InSplore - Performance Analyzer - Locate Cage - Execute a CLI command - Execute a command on a node - InServ Product Maintenance

Maintenance Mode: OFF

Service Processor

SP	Version	Action
SP99159 [status]	SP-4.1.0.GA-86 [details]	- SPMAINT on the Web - Firewall Manipulation - Customer Controlled Access - Hot Fixes - Storage System Setup Wizard

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4. Click **Network Configuration**.

Figure 96 SPOCC Network Configuration Page

hp 3PAR Service Processor Onsite Customer Care - SPOCC User: SP0123 | Sign Out

Service Processor - Network Configuration

1. Customer Controlled Access (HQ Connectivity)
2. Connection Portal Control
3. Firewall Manipulation
4. Change Public Network Interface Parameters
5. Change Transfer Media
 - Data Transfer: Ethernet
 - Remote Operations: Ethernet
6. Test Public Network
7. Test 3PAR Secure Service Collector Server
8. Test 3PAR Secure Service Policy Manager

SPMAINT Main Menu

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5. Click **Test 3PAR Secure Service Collector Server**.
6. Verify the SPOCC displays **Connectivity test to HP 3PAR Secure Service Collector Server successful**.

Figure 97 SPOCC Communication Results

The screenshot shows the HP 3PAR SPOCC interface. At the top, the HP and 3PAR logos are on the left, and the title "Service Processor Onsite Customer Care - SPOCC" is in the center. On the right, it says "User: SP0123 | Sign Out". A left-hand navigation menu includes links for Files, Support, Update, Notify, Reports, Setup, SPmaint, and Help, with "Home" selected. Below the menu, the user ID "SP99159" is displayed. The main content area is titled "Service Processor - Test Secure Service Collector" and shows a log of test results: "Beginning test...", "Starting agent ping test.", "Connectivity test to HP 3PAR Secure Service Collector Server successful.", "INFO xgEnterpriseProxy: Message round-trip time: 0.005000 seconds.", "INFO xgEnterpriseProxy: Message round-trip time: 0.250000 seconds.", "Starting Global Access Server connectivity tests.", "Connectivity test to HP 3PAR Global Access Servers successful.", "INFO Connection test to Global Access Server rmsgas01-qa.3pardata.com was successful.", "INFO Connection test to Global Access Server rmsgas02-qa.3pardata.com was successful.", "NOTE Connected to 2 out of 2 configured Global Access Servers", and "NOTE Connectivity to only one Global Access Servers is required." At the bottom, there are buttons for "SPMaint Main Menu" and "Network Config Menu", and a footer with copyright information and a timestamp.

7. Verify the Service Processor is transferring files successfully by doing the following steps:
 - a. Click **Home** to return to the SPOCC home page.
The **Transfer Status** entry indicates the overall status of SP file transfer.
 - b. To access the SP File Transfer Monitor, click **Transfer Status**.
 - c. Verify the SP file transfer is successful:
 - The **Last transfer status** entry should include information about the last SP transfer, including the date and time and a status of **Ok**.
 - The **Number of files on transfer queue** and **retry queue** should be 0 (zero), which indicates the SP is currently able to pass files to the transport layer.
 - The **Service Processor upload queue** and **SSAgent** upload queue show the number of files in the queue and should display the date, time, and filename of the most recent file to start uploading.
If this queue becomes long, the Service Processor is encountering transfer issues. To remedy the situation, contact HP support.

The SP File Transfer Monitor refreshes every 15 seconds.

F Identifying Physical Locations of the Logical Cage Numbers

Use the following CLI commands to identify the physical locations of the logical cage numbers. Enter the numbers into the diagram below and then store them on the storage system *admin* volume by following these instructions.

1. Issue `showcage` to display the drive cage numbers/names
2. Issue `locatecage cage<n>` where `cage<n>` is the drive cage number/name, to blink the LEDs on the front of the drive cage. This will be performed one cage at a time.
3. Once the physical location of the drive cage is identified, make a note of the drive cage number on a separate paper for reference during servicing.

NOTE: Table below provides example of drive cage numbering.

4U		4U	4U
4U		4U	4U
4U		4U	4U
4U		4U	4U
1U		1U	1U
4U		4U	4U
4U		4U	4U
4U		4U	4U
4U		4U	4U
Node rack		Cage rack 1	Cage rack 2

4. Issue `setcage position "Rack<xx> Rack-Unit<yy>" cage<n>`, where `<xx>` is the rack designator (00 is the main rack which has nodes, and 01 or higher are expansion cabinets), `<yy>` is the Rack-Unit number in the rack (e.g., 1 – 50) at the bottom of the drive cage, and `cage <n>` is the logical drive cage number/name.
5. Issue `showcage -d cage<n>` to verify these settings.
6. Repeat for each drive cage displayed in step 1.
7. Exit and logout of the SPMAINT session.

G Troubleshooting

Troubleshooting Duplicate IP Address Issues

If the wizard cannot configure the permanent IP address you entered because it is already in use:

1. Click **Stop** to stop the *Apply Settings* process and return to the Service Processor Setup wizard.
2. Click the **Prev** button until you reach Step 2: *SP Networking*.
3. Determine an available IPv4 address to use for the Service Processor and enter that IP address in the **IP Address** text box.
4. Click the **Next** button until you return to Step 7: *Apply Settings*. (You do not need to enter any other Service Processor settings again.)

The wizard automatically begins to apply the settings again.

If the Service Processor displays a `Page Not Found` or similar message, the permanent Service Processor IP address you entered is not a valid address. You must set up the Service Processor again.

1. Restart the SP Setup wizard:
 - If you are using a physical Service Processor, return to the Set IP Address wizard and set up a new, valid IP address. For more information on determining and assigning the Service Processor IP address, see [“Configuring the Physical Service Processor IP Address” \(page 67\)](#).
After you have set up the new IP address, use that new permanent IP address to restart the Service Processor Setup wizard (Enter the URL `https://<permanent SP IP address>/sp/SpSetupWizard.html`).
 - If you are using a VSP, use the temporary SP IP address to restart the Service Processor Setup wizard (enter the URL `https://<temporary SP IP address>/sp/SpSetupWizard.html`).
2. Proceed through the Service Processor Setup wizard, enter your Service Processor settings again. (The Service Processor ID is already set; you do not need to reset the ID.)